BIDHAN CHANDRA COLLEGE

TOPIC

ENVIRONMENTAL POLLUTION

SUBMITTED TO – DEBDYUTI SENGUPTA

SUBMITTED BY

NAME : NAGHMA PARWEEN

REGISTRATION NO : KNU20103002944

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ACKNOWLEDGMENT

The Rapid development of cities and consequent population explosion in urban areas has led to depletion of surface water resources. For fulfilment of daily water requirement indiscriminate pumping of ground water is being resorted to, leading to towering of ground water Table. At the same time the rain water is not being conserved. Which ultimately goes waste. To avoid this imbalance, conservation of rain water in the from of rain water harvesting is the only solution.

no dated 17.02.05 also. This publication is an attempt to compile all the relevant information regarding various Methods commonly in use. These methods can be used by field engineers for desining and implementing Rain water Harvesting systems-

PREFACE

pollution is a slow and sweet poision which is disturbing us and owe living very badly in all the aspects such as physically, Mentally, socially and intellectually. It is not so easy to stop it at once however, not so tough to prevent it gradually.

The main causes of the pollution are wastes from the chemical industries and fretories pouring their wastes diretly into the large water bodies. such contomi notes gets introduced into the natural environment and causing adverse change pollution can be man-made or natural however. pollution from the natural sowres is less harming than the man-made.

pollution or components of the pollution get intermingled into the natural resources such as water, air, soil etc. pollution was started from the prehistoric times however correctly it has been because of the deforestration, urbanization, technological advancement and advanced life style.

people should understand the importance of environment they live in and respect the one. given by brod to live in a simple life on the earth (the only known planet having life). various types of pollution such as water pollution, soil or land pollution air pollution and sound or noise pollution all are very harmful

of that. use of various fertilizers and their chemicals in the agriculture for many years in order to get better and healthy crops has created serious problems to the humanity.

Increasing number of vehicals in the cities in another main causes of air pollution. Diesel vehicals are more dangerous that the petrol vehicles are as they emit more carbon dioxide and carbon monoxide, both are very harmful to the health and atmosphere. My dear friends it is very necessary for the common public to be aware of the bad effects of pollution and run in the direction against pollution to reduce its effects. We should plant more green plants in the surrounding areas and sides of the roads in order to Maintain

the natural eqiuliberium in the environment.

pollution is affecting our lives so we have to take individual steps and do every possible things what we can do. We should not depends only on our goverment actions for some positive changes. common people like us are the Main facter to stop the stread of pollution.

I N D E X

Name   Nagma   parween

Class   Section   Roll No.   Year 2020-21

Subject   E.V.S

SI No	Experiment Description	Experiment Date	Submission Date	Remarks Signature
1.	Introduction			
2.	pollution			
i)	Air pollution			
ii)	Water pollution			
iii)	Thermal pollution			
iv)	Marine pollution			
v)	Soil pollution			
vi)	Nuclear pollution			
vii)	Noise pollution			
3.	conclusion			
4.	Reference or Biography			
5.	Objective of the study			

Introduction

pollution is the effects off undesirable changes in our surroundings that have harmful effects on plants, animals and human beings. This occurs when only short cost shorterm economic gains are made at the cost of long-term ecological benefits for humanity. No phenomenon has led to greater ecological changes than has been made by mankind. During the last few decades we have contaminated our air, water and land on which life itself depends with a variety of waste products.

pollutants include solid, liquid or gaseous substances presents in greater than natural abundance, produced due to human activity, which have a

detrimental effects on human health in average human requires about 12 kg of air each day, which is nearby 12-15 times greater than the amount of food we eat. So, even a small concentration of pollutants in the air becomes more significant in comparison to similar levels present in food. pollutants that enter water have the ability to spread to distant places, especially, in the marine eco system.

From an ecological perpective, pollution pollutants can be classified as follows:-

Degradable or non-persistent pollutants :- These can be rapidly broken down by natural process,

eg :- domestic sewage, discarded vegetable etc.

Slowly - degradable or persistent pollutants: These are pollutants that Remain in the environment for many years in an unchanged condition and take decades or longer to degrade; eg; DDT (pesticides) and most plastics.

Non - degradable pollutants: — These cannot be degraded by natural processes once they area released into the environment they are difficult to eradicate and continue to accumulate; y+ toxic elements like lead or mercury and nuclear wastes.

Enviourmental Pollution

The word Pollution is derived from latin word "Pollutionem" which means defile os make dirty Pollution is an undesirable change in physical, chemical or biological chara- clerities of our Air, water and land that may or will produced harmful effect on human life and othe living organsans.

KINDS OF POLLUTION

A) <u>Natural Pollution:-</u> Natural Pollution is due to Natural causes like storms, Marsh Gases, volcanic, exruptions, forests fires, earthquecks and erosions etc.

due to human activities. It is of three types.

Persnal Pollution: Noused by an individual and affect a little area. e.g smoking.

Occupational Pollution: Arises due to occupation or work and effects all the workers and area around them. e.g Textile mill, flour mill, stone crushing etc.

Community Pollution: Affects whole community e.g Fortilizer Industries, Refineries Power plants etc.

A Pollution is any subtance, chemical or physical factors which when released into the environments and human beings

TYPES OF POLLUTION

Pollution can be divided into following main categories.   7. Marine Pollution

Air Pollution

Water Pollution

Soil Pollution

other gases are less than 1%. This is
the composition of unpollution atmosphere
and this value remains constant upto
very high attitude. Air is the most
essential elements for life, but this
life supporting natural elements may
become britter enemy of life when
it gets polluted. the atmosphere is
saide to be polluted if the concentration

of any constituent increases or decrease drastically to cause harmful effect on human being. and other buring individuals.

AIR POLLUTANTS

Carbon Monoxcide: Carbon monoxide accounts for 50% of the total atmospheric Pollutants. It is formed by incomplete Combustion of fossil fuels.

Sources: It is produced by cigarette smoking incomplete combustion of fossil fuels in automobile, household, agriculture and industries etc.

carrying capacity of blood.

It is highly poisonous and can lead to acute poisoning, loss of vision abdomen pain nausea etc.

Effect on Plants

Excess CO can cause premature ageing of plants.

It causes leaf curling, leaf drop and

Also reduces the nitrogen fixing efficiency of bacteria.

all the life depends on this. But its higher concentration leads to environmental hazards. It is a Greenhoues gas and Produces Global warming Green house effect.

Impact on Health

i) Larger doses may causes headache and fatigue.

ii) In Higher mencentration it can impair vision and adversely effect the nervous system.

3. Sulphur dioxcide (SO_2) & It is produced in large quantified during smelting of metallic ores like Iron, Zink and copper, burning

of fossil Fuels.

Immpact on Heath

i) It irritates the respiratory tract and eyes.

ii) It can cause acute and chronic asthma.

4. Hydrogen sulphide (H_2S): It is produced by biological decay of protein material in stagnant water, paper, mills, sewage treatment plants etc.

Impect on Health

i) At higher cons. It can lead to blockage of O_2 trans port.

ii) It Acts as cell poison and damage the nerve cells.

Oxcides of Nitrogen sources: Produced in atmosphere electrophoto chemically and by burning of fosil fuels at high temperature. The important nitrogen oxides are. N_2O, NO, NO_2, N_2O_4, N_2O_5.

Impect on Health

The oxide Possess mutagenic property. NO_2 causes irritation in eyes, respiratory tract and causes cough.

Effect of Plants

Higher conc leads to death of Plants.

Nitrogen oxides Produce lesions, necrosis in Plants.

chloro Flourocarbons (CFCS): Freeron, chloro
Gluromethane as coolent. These are the
main Sources of CFC' they are also emitted
by Jet Plants.

Impect on Health Health

They Pass in food chain, act as hoison
effect reprodutive system.

Effect nervous system of human beings.

Smog:- It is formed by the combination
of smoke and fog. It is of two types:

Classical smog (London smog): It is a
brown smog which develops from smoke
dust Particles, water vapours, hydrogen

sulphioce and sulpur dioxide.

Photochemical smog (Los Angeles smog):

It is yellowish brown smog formed by Photochemical reaction between nitrogen oxide and hydrocarbons which produced secondary pollutants like ozone, PAN, aldehyde and phenol.

Health Impacts

PAN - cause eyes irritation and respiratory stress.

Impact on Plants

Ozone: Cause eye irritation, cough, chest discomfort, headache.

Impact on Plant

Damage ceawes, reduces grouth, productivity and reproduction.

Organic Derivatives [Aldehyde and Phenols]

Cause irritation in gastrid intestinal and respiratory tract.

Cause skin cancer, damage lives

Impact on vegetation

Toxic to Plants

Lead (Pb): It is produced by vehicular exhaust, inverter batteries

Impact on Health

It damages the brain cells in children.

It interfaires with the development and maturation of RBC's.

It cause infertility and complication in preganancy

Mecury (Hg): The major sources are Pesticide ivdustras, mining and refining of mercury.

Control of Air Pollution

Due to over whelming Growth of industries it is very difficult to bring air Pollution dawn to safe levels however in view

the prevention and control of air pollution demands attention. The following preventive and control measures should be adopted.

Vegetation: Trees should be grown on all availabel spaces because they use CO_2 and release O_2. They purify the Air.

Thire are certion plants which can absort harmful gases. e.g. Co is absorved by plant ficus variegate.

Automobiles: Tour stroke engines should be used instead of two stroke engines become because in two stroke enignes

the fuel is not burnt completely.

sulphur free fuel should be used in automobiles it reduces SO_2 pollution. CNG Can replace only unleaded Petrol should vans. are some of clean options available to us. As for as Possible efficient to us. Public transport system should be used instead of use separate vehicles by individuals.

Project Report of Environmental Science

GLOBAL ENVIRONMENTAL ISSUES

A Project work of Environmental Sciences

AEE101

BIDHAN CHANDRA COLLEGE, ASANSOL

2020-2023

Submitted By:

Amrita singh

Commerce Department:

B.com (Hons)

Accounting

Semester – 1

Roll no – 85

Registration no: KNU20103003031

Submitted to:

Mrs. Debdyuti Sengupta

Teacher

Bidhan Chandra College, Asansol

GLOBAL

ENVIRONMENTAL

ISSUES

CONTENT

PREFACE

I am presenting a project assignment like on the Environmental issues". In this project, I have tried to give all the important things about project.

In this project contain about "Introduction" of Environmental issue, "Problem of Environmental issues", ways to overcome Environmental issues, Conclusion etc. All of us are familier with all the activities which are affecting our Environment badly. So, its time to know more about the steps taken by our government to control ecological imbalance and destruction of environment. we know about the activities which affect the Environment but we don't know how to control those activities with the help of our government. Our government makes, many rules to protect our Environment.

I am thankful to my " Environment Science" teacher who gave me a moral support and guided me to complete this project on time. She also guided me in

different matters regarding this project. While doing this project, I came to know many things.

I have give all this information in this project by consulting books and useful websites.

INTRODUCTION

An introduction to Global Environmental Issues presents a comprehensive and stimulating introduction to the key environmental issues presently threatening our global environment. Offering an authoritative to key topics, a source of latest environmental information, and an innovative stimulus for debate, this is an article for all those studying on concerned with global environmental issues. Explanations of the evolution of earth's natural systems (hydrosphere, biosphere, geosphere, ecosphere) provide an essential understanding of the scientific concepts, processes and historical background to environmental issues.

The rabid growing population and economic development is leading to a number of environmental issues in India because of the uncontrolled growth of urbanization and industrialization, expansion and massive intensification of agricultural, and the destruction of forests. It is estimated that the country's population will increase to about 1·26 billion, by the year 2016. The projected population indicates that India will be the first most populous country in the world.

In Contrast, the environmental crises faced by developing nations are the result of poverty. For example, Third World countries often lack the resources and sanitation facilities to provide the public with clean water. The Kyoto global warming agreement reveals the difficulty to finding universal solutions to environmental problems. Developing nations would not consider even voluntary participation in emission reduction, arguing that such measures would impede their efforts to improve their economic and industries. Even within developed nations, the response to the treaty has varied.

In june 1998, the European Union reached an agreement that will reduce their greenhouse gas emission by 8%. However, many people in the united States have more negative altitudes the agreement; they asserthat achieving the reduced emission level could hurt the nation economy. As the Kyoto controversy suggests, international agreement over solutions to global environmental problems is not easily attained. These global and national debates one the subject of Conserving the Environment: current Controversies. The authors examine such topics as the state of the environment, the preservation of biodiversity, methods for reducing pollutions, and whether the free-market system can solve environmental problems.

Objective Of Study

Environmental objectives are goal that you would like to meet in future. Prevent and Control degradation of land, water, vegetation and air. Conserve and enhance natural and man-made heritage, including biological diversity of unique ecosystems. Improve Condition and productivity of degraded areas. Raise awareness and understanding of link between environment and development.

This mismanagement of resources had resulted in various environmental issues like pollution, global warming, nuclear, Eutrophication, Acid rain, deforestation, etc. Humans are only one of the species among the many species on the planet. Our activities should be designed to have minimal or nil effect on the system as a whole. When this sort of awareness is created among individuals; Universally, we would have a better planet.

Here are some examples of environmental objectives :-

* Minimize raw material use.
* Comply with all applicable environment laws.
* Use recycled products where feasible
* Reduce water consumption. and chemical spills
* Safeguard the environment for future generations.

(09)

Greenhouse gas in a lush garden

Greenhouse Effect

The greenhouse effect is the process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be without this atmosphere.

Radiatively active gases (i.e; greenhouse gases) in a planet's atmosphere radiate energy in all directions. Part of this radiation is directed towards the surface, thus warming it. Earth's natural greenhouse effect is critical to supporting life, and initially was a precursor to life moving out of the ocean onto land. Human activities, mainly the burning of fossil fuels and clearcutting of forest, have increased the greenhouse effect and caused global Warming.

The planet Venus experienced a runaway greenhouse effect, resulting in an atmosphere which is 96% carbon dioxide, and a surface atmospheric pressure roughly the same as found 900m (3000 ft) underwater on Earth. Venus may have had water oceans, but they would have boiled off as the mean surface temperature rose to the current 735K (462°C, 863°F).

greenhouses warm via a different mechanism. The term greenhouse effect is a slight misnomen. The greenhouse effect as an atmospheric mechanism functions through radiative heat loss. While a traditional greenhouse as a built structure blocks convective heat loss. The result however, is an increases in temperature in both cases.

History

The existence of the greenhouse effect, while not named as such, was proposed by joseph fourier in 1824. The argument and the evidence were further strengthened by Claude Pouillet in 1827 and 1838. John Tyndall was the first to measure the infrared absorption and emission of various gases and vapours. from 1859 onwards, he showed that the effect was due to a very small proportion of the atmosphere, with the main gases and vapours from 1859 onwards, he showed that the effect was due to very small proportion of the atmosphere, with the main gases having no effect, and was largely due to water vapour, though small percentages of hydro carbons and carbon dioxide had a significant effect. The effect was more fully quantified by Svante Arrhenius in 1896, who made the first quantitative

The Greenhouse Effect

Solar radiation powers the climate system.

Some of the infrared radiation passes through the atmosphere but most is absorbed and re-emitted in all directions by greenhouse gas molecules and clouds. The effect of this is to warm the Earth's surface and the lower atmosphere.

Some solar radiation is reflected by the Earth and the atmosphere.

ATMOSPHERE

EARTH

About half the solar radiation is absorbed by the Earth's surface and warms it.

Infrared radiation is emitted from the Earth's surface.

Predication of global warming due to a hypothetical doubling of atmospheric Carbon dioxide. However, the term "greenhouse" was not used to refer to this effect by any of these scientists; the term was first used in this way by Nils Gustaf Ekholm in 1901.

Description

Earth receives energy from the Sun in the form of ultraviolet, visible and near-infrared radiation. About 26% of the incoming solar energy is reflected to space by the atmosphere and clouds; Most of the remaining energy is absorbed at the surface of Earth. Because the Earth's surface is colder than the sun, it radiates at wavelengths that are much longer than the wavelengths that were absorbed. Most of this thermal radiation is absorbed by the atmosphere and warms it. The atmosphere also gains heat by sensible and latent heat fluxes from the surface. The atmosphere radiates energy both upwards and downwards is absorbed by the surface of Earth. This leads to a higher equilibrium temperature than if the atmosphere did not radiate.

An ideal thermally conductive blackbody at the same distance from the Sun as Earth would have a temperature of about 5.3°C (41.5°F). However, because Earth reflects about 30% of the incoming sunlight, this idealized planet's effective temperature (the temperature of a black body that would emit the same amount of radiation) would be about -18°C (0°F). The surface temperature of this hypothetical planet is 33°C (59°F) below Earth's actual surface temperature of approximately 14°C (57°F). The greenhouse effect is the contribution of greenhouse gases to this difference.

Details

The idealized greenhouse model is a simplication. In reality the atmosphere near the Earth's surface is largely opaque to thermal radiation and most heat loss from the surface is by Convection. However radiative energy losses become increasingly important higher in the atmosphere, largely because of the decreasing concentration of water vapor, an important greenhouse gas. Rather than the surface itself, it is more realistic to think of the greenhouse effect as applying to a layer in the mid-troposphere, which is effectively coupled to the surface by a lapse rate.

Greenhouse gases (GHG) and their sources
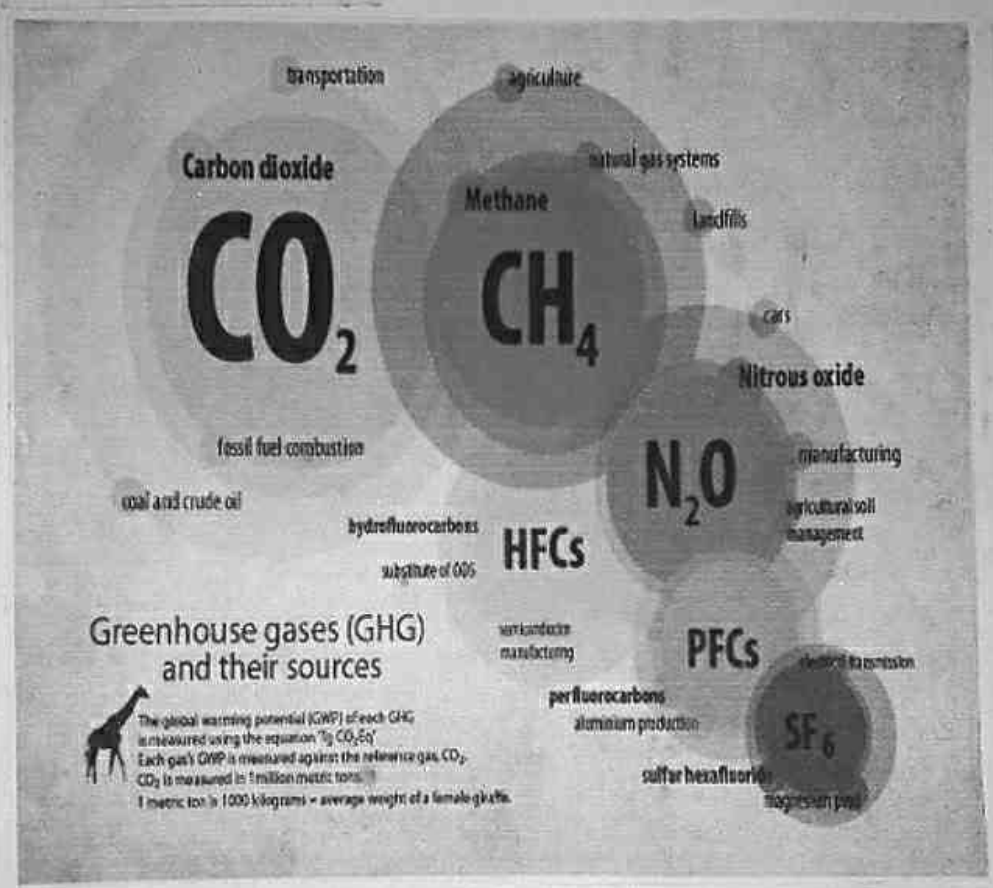
A simple picture also assumes a steady state, but in the real world, the diurnal cycle as well as the seasonal cycle and weather disturbances complicate matters. Solar heating applies only during daytime. During the night, the atmosphere cools somewhat, but not greatly, because its emissivity is low. Diurnal temperature changes decrease with height in the atmosphere. Earth's surface, warmed to an "effective temperature" around $-18°c$ ($0°F$), radiates long-wavelength, infrared heat in the range of $4-100$ μm. At these wavelengths, greenhouse gases that were largely transparent to incoming solar radiation are more absorbent.

Greenhouse gases — including most diatomic gases with two different atoms (such as carbon monoxide, CO) and all gases with three or more atoms — are able to absorb and emit infrared radiation. Though more than 99% of the dry atmosphere is IR transparent (because the main constituents — N_2, O_2 and Ar — are not able to directly absorb or emit infrared radiation, intermolecular collisions cause the energy absorbed and emitted by the greenhouse gases to be shared with the other, non-IR-active, gases.

Greenhouse gases

By their percentage contribution to the green-house effect on Earth the four major gases are:

- Water vapour, 36 - 70%.
- Carbon dioxide, 9 - 26%.
- Methane, 4 - 9%.
- Ozone, 3 - 7%.

It is not possible to assign a specific percentage to each gas because the absorption and emission bands of the gases overlap (hence the ranges given below above) clouds also absorb and emit infrared radiation and thus affect the radiative properties of the atmosphere.

Role in climate change

Strengthening of the greenhouse effect through human activities is known as the enhanced (or anthropogenic) greenhouse effect. This increase in radiative forcing from human activity is attributable mainly to increased atmospheric carbon dioxide levels. According to the 2014 Assessment Report from the Intergovernmental Panel on climate change, "atmospheric concentrations of carbon dioxide, methane and nitrous

Oxide are unprecedented in at least the last 8,00,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid - 20th century. CO_2 is produced by fossil fuel burning and other activities such as cement production and tropical deforestation.

Measurements of CO_2 from the Mauna Loa Observatory show that concentrations have increased from about 313 parts per million (PPm) in 1960, passing the 400 ppm milestone on May 9, 2013. The current observed amount of CO_2 exceeds the geological record maxima (~ 300 ppm) from ice core data.

Over the past 8,00,000 years, ice-core data shows that carbon dioxide has varied from values as low as 180 ppm to the preindustrial level of 270 ppm. Paleoclimatologist consider variations in carbon dioxide concentration to be a fundamental factor influencing climate variations over this time scale.
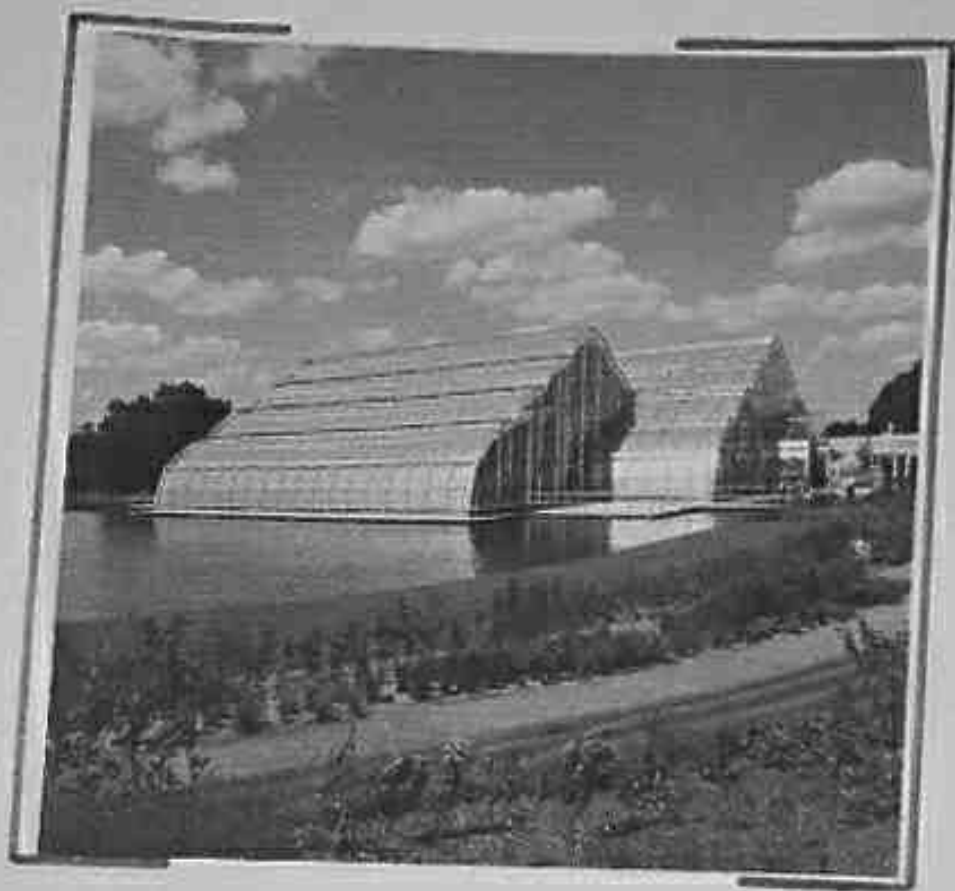
A modern greenhouse in RHS valley

Real greenhouses

The "greenhouse effect" of the atmosphere is named by analogy to greenhouses which become warmer in sunlight. However, a greenhouse is not primarily warmed by the "greenhouse effect". Greenhouse effect is actually a misnomer since heating in the usual greenhouse is due to the reduction of convection, while the "greenhouse effect" works by preventing absorbed heat from leaving the structure through radiative transfer.

Heated greenhouses are yet another matter: as they have an internal source of heating, it is desirable to minimise the amount of heat leaking out by radiative cooling. This can be done through the use of adequate glazing.

It is possible in theory to build a greenhouse which lowers its thermal emissivity during dark hours, such a greenhouse would trap heat by two different physical mechanisms, combining multiple greenhouse effects, one of which more closely resembles that atmospheric mechanism, rendering the misnomer debate moot.

International Day for the Preservation of the
Ozone Layer

SAVE THE PROTECTIVE SKIN OF MOTHER EARTH

OZONE LAYER DEPLETION

Ozone depletion consists of two related events observed since the late 1970s: a steady lowering of about four percent in the total amount of ozone in Earth's atmosphere (the ozone layer), and a much longer springtime decrease in stratospheric ozone around Earth's polar regions. The latter phenomenon is referred to as the ozone hole. There are also springtime polar tropospheric ozone depletion events. In addition to these stratospheric events.

      The main cause of ozone depletion and the ozone hole is manufactured chemicals, especially manufactured halocarbon refrigerants, solvents, propellants and foam-blowing agents (chlorofluorocarbons (CFCs), HCFCs, halons), referred to as ozone depleting substances (ODS). These compounds are transported into the stratosphere by turbulent mixing after being emitted from the surface, mixing much faster than the molecules can settle. Once, in the stratosphere, they release atoms from the halogen group through photodissociation, which catalyze the breakdown of ozone (O_3) into oxygen (O_2). Both types of ozone depletion

were observed to increase as emissions of halocarbons increased.

Ozone depletion and the ozone hole have generated worldwide concern over increased cancer risks and other negative effects. The ozone layer prevents most harmful wavelengths of ultraviolet (UV) light passing through the Earth's atmosphere. These wavelength cause skin cancer, sunburn, permanent blindness and cataracts, which were projected to increase dramatically as a result of thinning ozone, as well as harming plants and animals. These concerns led to the adoption of the Montreal Protocol in 1987, which bans the production of CFCs, halons, and other ozone-depleting chemicals.

The ban came into effect in 1989. Ozone levels stabilized by the mid-1990s and began to recover in the 2000s, as the shifting of the jet stream in the southern hemisphere towards the south pole has stopped and might even be reversing. Recovery is projected to continue over the next century, and the ozone hole is expected to reach pre-1980 levels by around 2075.

The Montreal Protocol is considered the most successful international environment agreement to date.

(19)

Total Ozone Reanalysis • 25 September

ECMWF

Ozone Cycle Overview

Three forms (or allotropes) of oxygen are involved in the ozone-oxygen cycle: Oxygen atoms (O or atomic oxygen), oxgen gas (O_2 or diatomic oxygen) and ozone gas (O_3 or triatomic oxygen). Ozone is formed in the stratosphere when oxygen molecules photodissociate after absorbing ultraviolet Photons. This converts a single O_2 into two atomic oxygen radicals. The atomic oxygen radicals then combine with separate O_2 molecules to create two O_3 molecules.

These ozone molecules absorb ultraviolet (UV) light, following which ozone splits into a molecule of O_2 and an oxygen atom. The oxygen atom then joins up with an oxygen molecule to regenerate ozone. This is a continuing process that terminates when an oxygen atom recombines with an ozone molecule to make two O_2 molecules.

$$O + O_3 \longrightarrow 2O_2$$
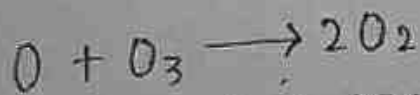
The total amount of ozone in the stratosphere is determined by a balance between photochemicals production and recombination.

Ozone can be destroyed by a number of free-radical catalysts; the most important are the hydroxyl radical (OH), nitric oxide radical (NO), chlorine radical (Cl) and bromine radical (Br).

The dot is a notation to indicate that each species has an unpaired electron and is thus extremely reactive. Once in the stratosphere, the Cl and Br atoms are released from the parent compounds by the action of ultraviolet light, e.g:

$CFCl_3$ + electromagnetic radiation $\rightarrow$ Cl· + ·$CFCl_2$
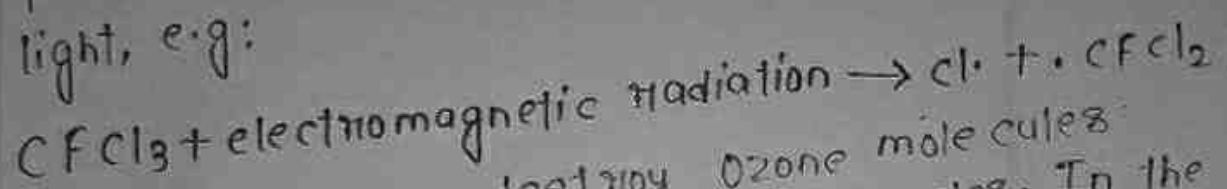
Cl and Br atoms destroy ozone molecules through a variety of catalytic cycles. In the simplest examples of such a cycle, a chlorine atom reacts with an ozone molecule (O_3), taking an oxygen atom to form chlorine monoxide (ClO) and leaving an oxygen molecule (O_2). The ClO can react with a second molecule of ozone, releasing the chlorine atom and yielding two molecules of oxygen. The chemical shorthand for these gas-phase reactions is:

• Cl· + O_3 $\rightarrow$ ClO + O_2
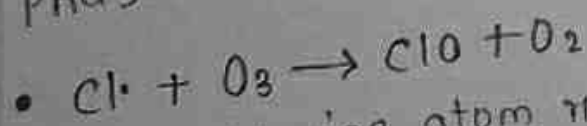
A chlorine atom removes an oxygen atom from an ozone molecule to make a ClO molecule.

cule.

• $ClO + O_3 \longrightarrow Cl \cdot + 2O_2$

This ClO can also remove an oxygen atom from an ozone molecule to make a ClO, another ozone molecule; the chlorine is free to repeat this two-step cycle.

The overall effect is a decrease in the amount of ozone, though the rate of these processes can be decreased by the effects of null cycles.

A single chlorine atom is able to react with an average of 1,00,000 ozone molecules before it is removed from the catalytic cycle. This fact plus the amount of chlorine released into the atmosphere yearly by chlorofluoro carbons (CFCs) and hydrochlorofluoro carbons (HC-FCs) demonstrates the danger of CFCs and HCFCS to the Environment.

Aug 29, 2017   Aug 29, 1988

Observation of ozone layer depletion

The ozone hole is usually measured by reduction in the total column ozone above a point on the Earth's surface. This is normally expressed in 'Dobson units', abbreviated as "DU". The most prominent decrease in ozone has been in the lower stratosphere. Marked decreases in column ozone in the Antarctic spring and early summer compared to the early 1970s and before have been observed using instruments such as the total ozone Mapping spectrometer (TOMS).

Predictions of ozone levels remain difficult, but the precision of models' predictions of observed values and the agreement among different modeling techniques have increased steadily. The World Meteorological Organization Global Ozone Research and Monitoring project – Report no. 44 comes out strongly in favor of the Montreal Protocol, but notes that a UNEP 1994 Assessment overestimated ozone loss for the 1994-1997 period.
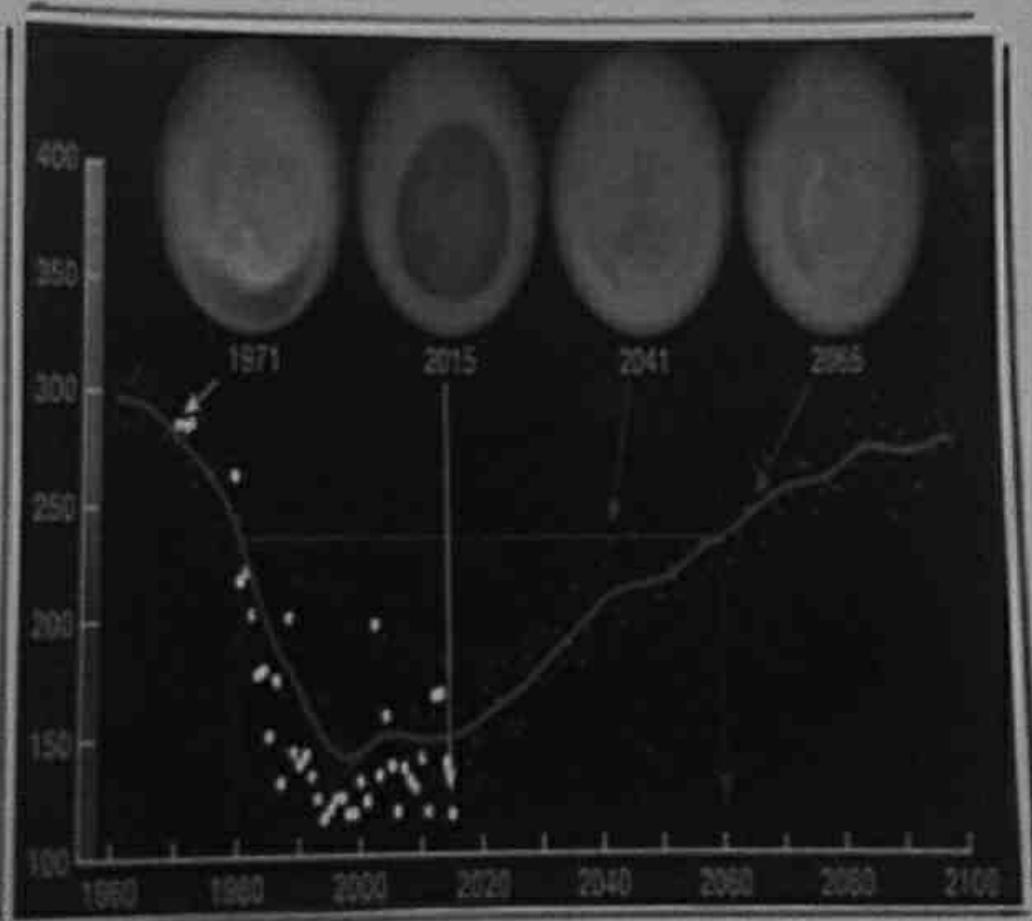
Ozone hole and it Causes.

The Antarctic ozone hole is an area of the Antarctic Stratosphere in which the recent ozone levels have dropped to as low as 33 %. of their pre-1975 values. The ozone hole occurs during the Antarctic spring, from September to early December, as strong westerly winds start to circulate around the continent and create an atmospheric container. Within this polar vortex, over 50 % of the lower stratospheric ozone is destroyed during the Antarctic spring.

As explained above, the primary cause of ozone depletion is the presence of chlorine-containing source gases. (Primarily CFCs and related halocarbons). These polar stratospheric clouds form during winter, in the extreme cold. Polar winters are dark, consisting of three months without solar radiation (sunlight). The lack of sunlight contributes to a decrease in temperature and the polar vortex traps and chills the air. Temperatures having around or below -80°c. These low temperatures form cloud participates. There are 3 types of PSC clouds - nitric acid trihydrate clouds, slowly cooling water-ice clouds

and rapid cooling water-ice (nacreous) clouds-provide surfaces for chemical reactions whose products will, in the spring lead to Ozone destruction.

Most of the ozone that is destroyed is in the lower stratosphere, in contrast to the much smaller ozone depletion through homogeneous gas-phase reactions, which occurs primarily in the upper strato. sphere.

Interest in the Ozone layer depletion

Public misconceptions and misunderstandings of complex issues like ozone depletion are common. The limited scientific knowledge of the public led to confusion about global warming on the perception of global warming as a subset of the "Ozone hole". In the beginning, classical green NGOs refrained from using CFC depletion for compaigning, as they assumed the topic was too complicated. They became active much later, e.g. in Greenpeace's support for a CFC-free fridge produced by the former East German company VEB dKK Scharfenstein.

(25)

THE EARTH'S ATMOSPHERE

EXOSPHERE

EXOBASE

THERMOSPHERE

KARMAN LINE

MESOSPHERE

STRATOSPHERE

OZON LAYER

TROPOSPHERE

The sudden identification in 1985 that there was a substantial "hole" was widely reported in the press. While the Antarctic ozone hole has a relatively small effect on global ozone, the hole has generated a great deal of public interest because :

• Many have worried that ozone holes might start appearing over other areas of the globe, though to date the only other large-scale depletion is a smaller ozone "dimple" observed during the Arctic spring around the North pole. Ozone at middle latitudes has declined, but by a much smaller extent (a decrease of about 4-5%)

• If stratospheric conditions become more severe (cooler temperatures, more clouds, more active chlorine), global ozone may decrease at a greater pace. Standard global warming theory predicts that the stratosphere will cool.

Strong Long Wave ------ Weak Long Wave
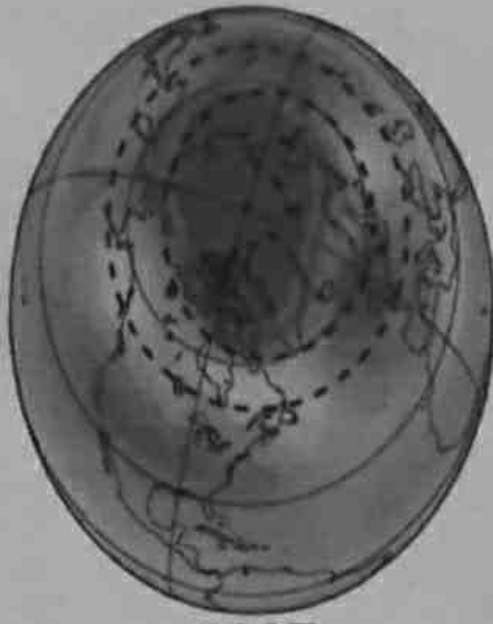
1984   1997

Total Column Ozone

low   average   high

Ozone depletion and Global Warming

Among others, Robert Watson had a role in the science assessment and in the regulation efforts of ozone depletion and global warming. Prior to the 1980s, the EU, NASA, NAS, UNEP, WMO and the British government had dissenting scientific reports and Watson played a role in the process of unified assessments. Based on the experience with the ozone case, the IPCC started to work on a unified reporting and science assessment to reach a consensus to provide the IPCC summary for policymakers.

The long term modelling of the process, its measurement, study, design of theories and testing take decades to document, gain wide acceptance, and ultimately become the dominant paradigm. Several theories about the destruction of ozone were hypothesized in the 1980s, published in the late 1990s, and are currently being investigated. Dr. Drew Schindell, and Dr. Paul Newman, NASA, Goddard,

Ozone layer hole appears to be healing

Proposed a theory in the late 1990s, using computational modeling methods to model ozone destruction, that accounted for 78% of the ozone destroyed. further refinement of that model accounted for 89 percent of the ozone destroyed, but Pushed back the estimated recovery of the ozone hole from 75 years to 150 years. (An important part of that model is the lack of stratospheric flight due to depletion of fossil fuels)

In 2019, NASA reported that there was no significant relation between size of the ozone hole and the climate change.
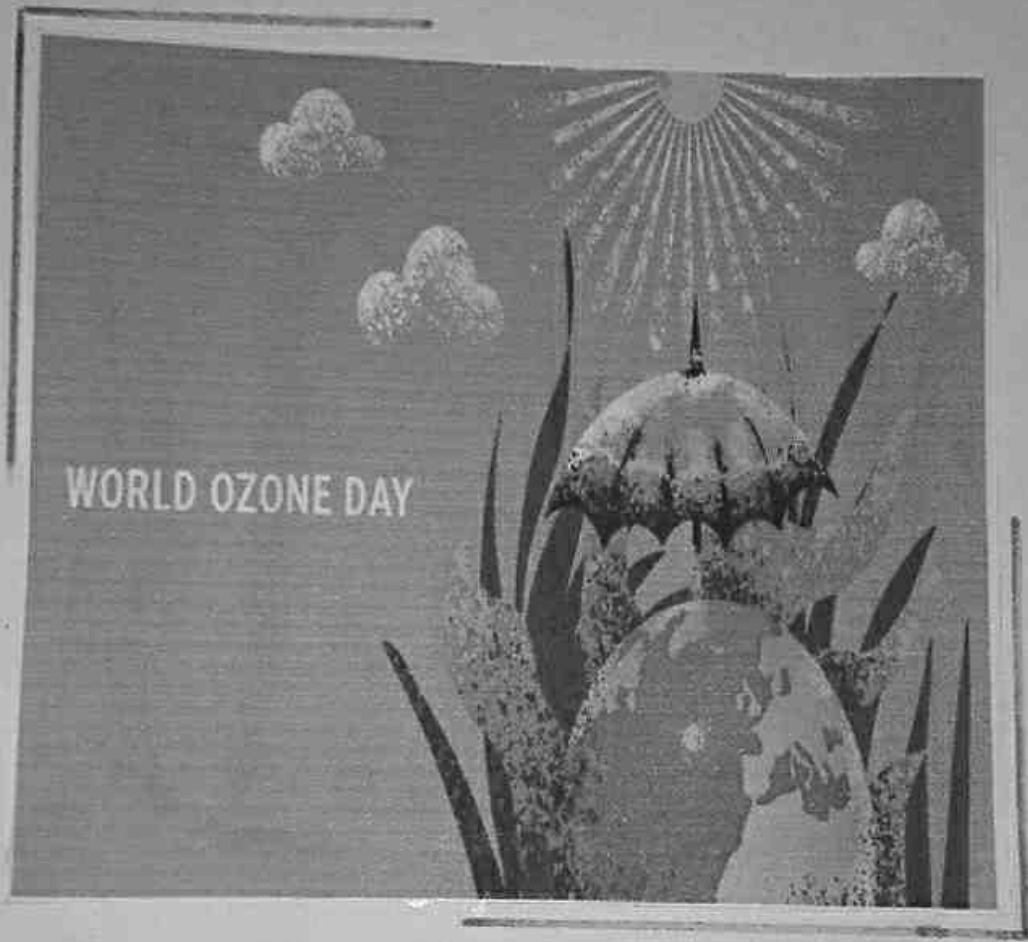
WORLD OZONE DAY

World OZONE Day

In 1994, the United Nations General Assembly voted to designate September 16 as the International Day for the Preservation of the Ozone layer on "World Ozone day" to commemorate the signing of the Montreal Protocol on that date in 1987.

ACID RAIN

ACIDIC RAIN CAUSED BY ATMOSPHERIC POLLUTION

ACID RAIN

Acid Rain is a rain or any other form of precipitation that is unusually acidic, meaning that it has elevated levels of hydrogen ions [low PH]. It can have harmful effects on plants, aquatic animals, and infrastructure. Acid rain is caused by emissions of sulphur dioxide and nitrogen oxide, which react with the water molecules in the atmosphere to produce acids. Some governments have made effort since the 1970s to reduce the release of sulfur dioxide nitrogen oxide into the atmosphere with positive result. Nitrogen oxides can also be produced naturally by lighting strikes, and sulphur dioxide is produced by volcanic eruptions.

Acid rain has been shown to have adverse impacts on forests, freshwaters, and soils, killing insect and aquatic life-forms, causing paint to peel, corrosion of steel structures such as bridges, and weathering of stone buildings and statues as well as having impacts on human health.

Definition

"Acid rain" is a popular term referring to the deposition of a mixture from wet (rain, snow, sleet, fog, cloud water, and dew) and dry (acidifying particles and gases) acidic components. Distilled water, once carbon dioxide is removed, has a neutral PH of 7. Liquids with a PH less than 7 are acidic, and those with a pH greater than 7 are alkaline. 'clean' or unpolluted rain has an acidic PH, but usually no lower than 5.7, because carbon dioxide and water in the air react together to form carbonic acid, a weak acid according to the following reactions:

$$H_2O(l) + CO_2(g) \rightleftharpoons H_2CO_3(aq)$$
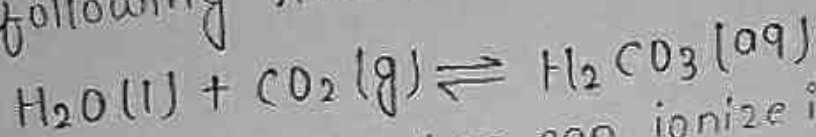
Carbonic acid then can ionize in water forming low concentrations of carbonate and hydronium ions:

$$H_2O(l) + H_2CO_3(aq) \rightleftharpoons HCO_3^-(aq) + H_3O^+(aq)$$
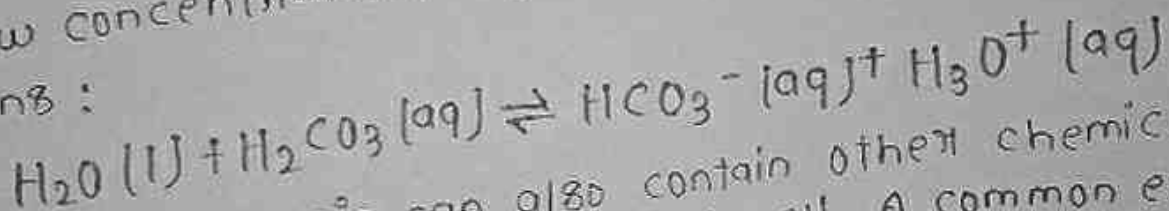
Unpolluted rain can also contain other chemicals which affects its PH (acidity level). A common example is nitric acid produced by electric discharge in the atmosphere such as lighting. Acid deposition as an environmental issue (discussed later in the article) would include additional acids other than H_2CO_3.

History

The corrosive effect of polluted, acidic city air on limestone and marble was noted in the 17th Century by John Evelyn, who remarked upon the poor condition of the Arundel marbles. Since the Industrial Revolution, emissions of sulfur dioxide and nitrogen oxides into the atmosphere have increased. In 1852, Robert Angus Smith was the first to show the relationship between acid rain and atmospheric pollution in Manchester, England.

In the late 1960s, scientists began widely observing and studying the phenomenon. The term "acid rain" was coined in 1872 by Robert Angus Smith. Canadian Harold Harvey was among the first to research a "dead" lake. Waldemar Christofer Brogger was the first to acknowledge long-distance transportation of pollutants a crossing borders from the United Kingdom to Norway. Public awareness of acid rain in the US increased in the 1970s after The NewyorK Times published reports from the Hubbard Brook Experimental Forest in New Hampshire of the harmful environmental effects that result from it.

Occasional pH readings in rain and fog water of well below 2.4 have been reported in industrialized areas.

Hardward University, wraps some of the bronze and marble statues on its Campus

Industrial acid rain is a substantial problem in china and Russia and areas downwind from them. These are all burn sulfur contaning coal to generate heat and electricity. An example of this effect is the low pH of rain which falls in Scandinavia.

In the United States

The earliest report about acid rain in the united states was from the chemical evidence from Hubbard Brook valley. In 1972, a group of scientists including Gene Likens discovered the rain that was deposited at White Mountains of New Hampshire was acidic.

In 1980, the US congress passed an Acid Deposition Act. This Act established an 18-year assessment and research program under the direction of the National Acidic Precipitation Assessment Program (NAPAP).

In 2007, total SO_2 emissions were 8.9 million tons, achieving the program's long-term goal ahead of the 2010 statutory deadline. The volunteers collected samples, checked for acidity, and reported back to the organisation. The information was then used to demonstrate the full extent of the phonomenon.

In Canada

In the 1970s and 80s, acid rain was a major topic of research at the Experimental Lakes area (ELA), in Northwestern Ontario, Canada. Researchers added sulfuric acid to whole lakes in controlled ecosystem experiments to simulate the effects of acid rain.

In 1985, Seven canadian Provinces (all except British columbia, Alberta and Saskatchewan) and the federal government signed the Eastern canada Acid Rain Program. The Provinces agreed to limit their combined sulfur dioxide emissions to 2.3 million tonnes by 1994. The canada- US Air Quality Agreement was signed in 1991. In 1998, all federal, Provincal and territorial Ministers of Energy and Environment signed The canada- Wide Acid Rain strategy for post- 2000, which was designed to protect lakes that are more sensitive than those protected by earlier policies.

Effect of acid rain on statues

Emissions of chemical leading to acidification

The most important gas which leads to acidification is sulfur dioxide. Emissions of nitrogen oxides which are oxidized to form nitric acid are of increasing importance due to stricter controls on emissions of sulfur compounds. 70 Tg(s) per year in the form of SO_2 comes from fossil fuel combustion and industry, 2.8 Tg (s) from wildfires, and 7-8 Tg(s) per year from volcanoes.

Natural Phenomena

Mean acidifying emissions (air pollution) of different foods per 100g of protein

Food Types	Acidifying Emission (g SO_2 eq per 100 g protein)
	343.6
Beef	165.5
cheese	142.7
Pork	
Lamb and Mutton	139.0
Farmed	133.1
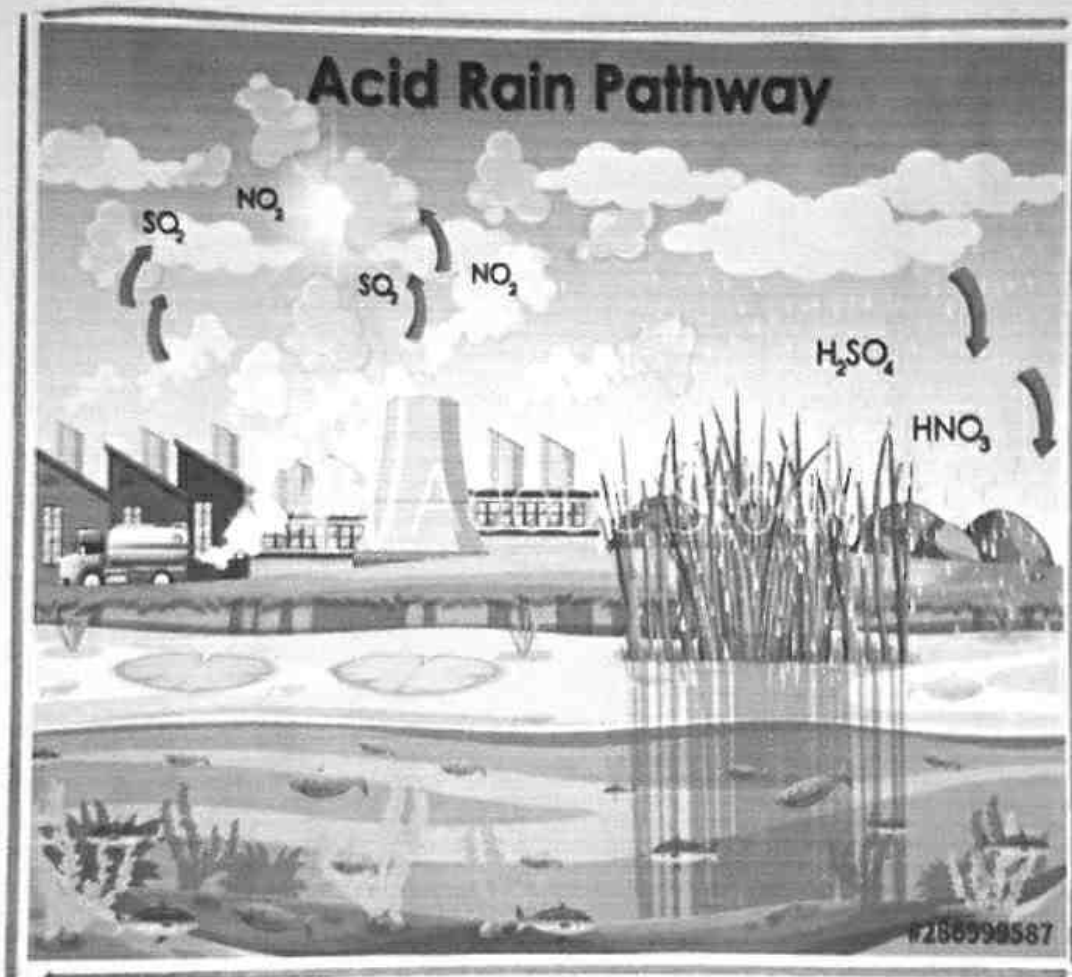
Crustaceans   102.4
Poultry
farmed fish   65.9
                                                   53.7
Eggs
Ground nuts   22.6
Peas   8.5
Tofu   6.7

The Principal natural Phenomena that Contribute acid-Producing gases to the atmosphere are emissions from volcanoes. The major biological source of sulfur compounds is dimethyl sulfide.

Nitric acid in rainwater is an important source of Fixed nitrogen for plant life, and is also Produced by electrical activity in the atmosphere such as lighting.

Acidic deposits have been detected in glacial ice thousands of years old in remote parts of the globe.

The Principal cause of acid rain is sulfur and nitrogen compounds from human sources, such as electricity, generation, animal agriculture, factories, and motor vehicles.

Combustion of Fuels Produces sulfur dioxide and nitric oxides. They are converted into sulfuric acid and nitric acid.

(36)
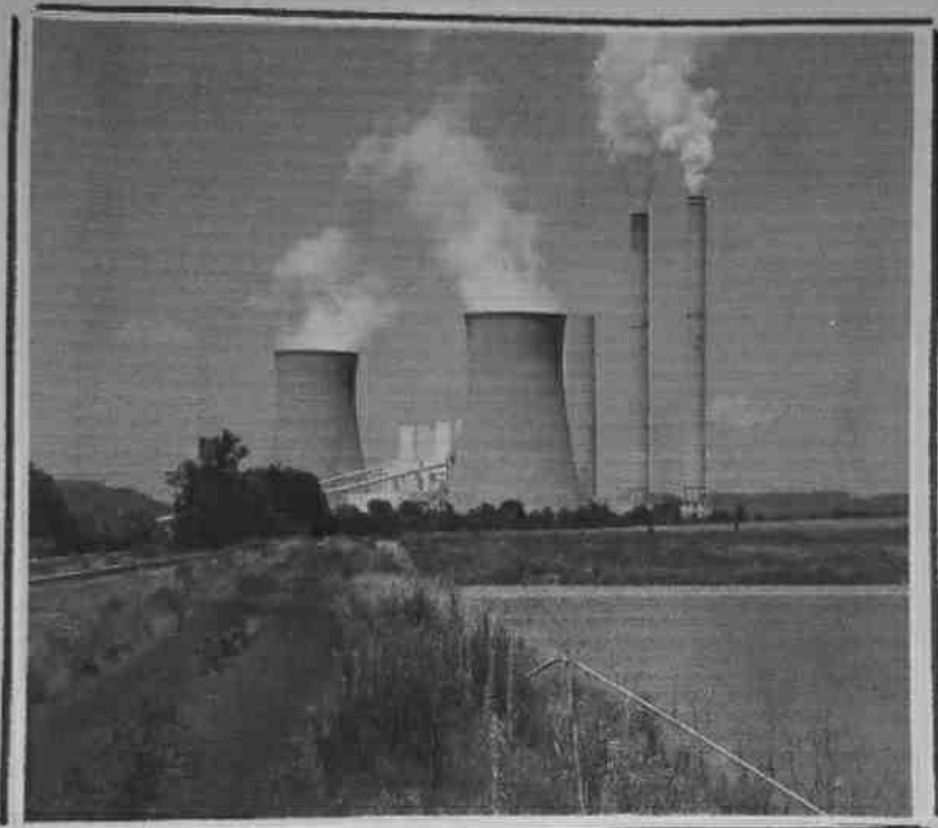
The Coal-fired Gavin Power Plant
in Cheshire, Ohio

Human Health Effect

Acid rain does not directly affect human health. The acid in the rain water is too dilute to have direct adverse effects. The particulates responsible for acid rain (sulfur dioxide and nitrogen oxides) do have an adverse effect. Increased amount of fine particulars matters in the air contribute to heart and lung problems, ~~ret~~ including asthma and bronchitis.

Acid rain can damage buildings, historic, monuments, and statues, especially those made of rocks, such as limestone and marble that contain large amounts of calcium carbonate. Acids in the rain react with calcium compounds in the stones to create gypsum, which then flakes off.

Places significantly impacted by acid rain around the globe include most of eastern Europe from Poland northward into scandinavia, the eastern third of the united states, and southeastern Canada. Other affected areas include the southeastern coast of China and Taiwan.

Eutrophication

Nitrogen   Phosphorus

These nutients
cause an increased
an increase in
phytoplankton

Algae Bloom

Algae Die

Phytoplankton growth
on sedgegrass   Oxygen   Decay

Sedgegrass

lose: Food, Habitat and oxygen production
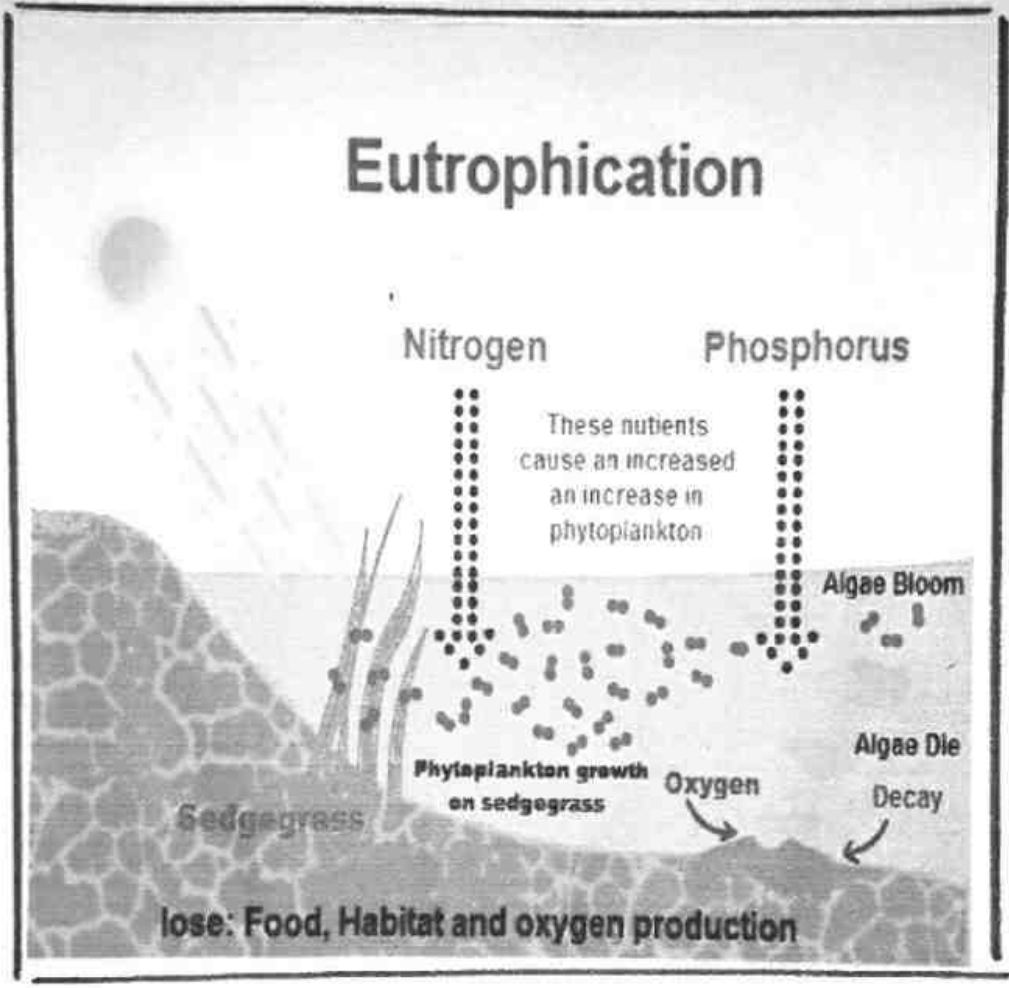
Eutrophication

Eutrophication (from Greek eutrophos, "well-nourished"), dystrophication or hypertrophication, is the process by which a body of water becomes overly enriched with minerals and nutrients which include excessive growth of algae. This process may result in oxygen depletion of the water body after the bacterial degradation of the algae. One example is an "algal bloom" or great increase of phytoplankton in a pond, lake, river or coastal zone as a response to increased levels of nutrients. Eutrophication is often induced by the discharge of nitrate or phosphate containing detergents, fertilizers, or sewage into an aquatic system.

Lake eutrophication has become a global problem of water pollution. Chlorophyll-a, total nitrogen, total phosphorus, biological or chemical oxygen demand and Secchi depth are the main indicators to evaluate lake eutrophication level. Target 14.1 of sustainable development goal 14 preventing every form of marine pollution including nutrient pollution which is eutrophication.

(38)
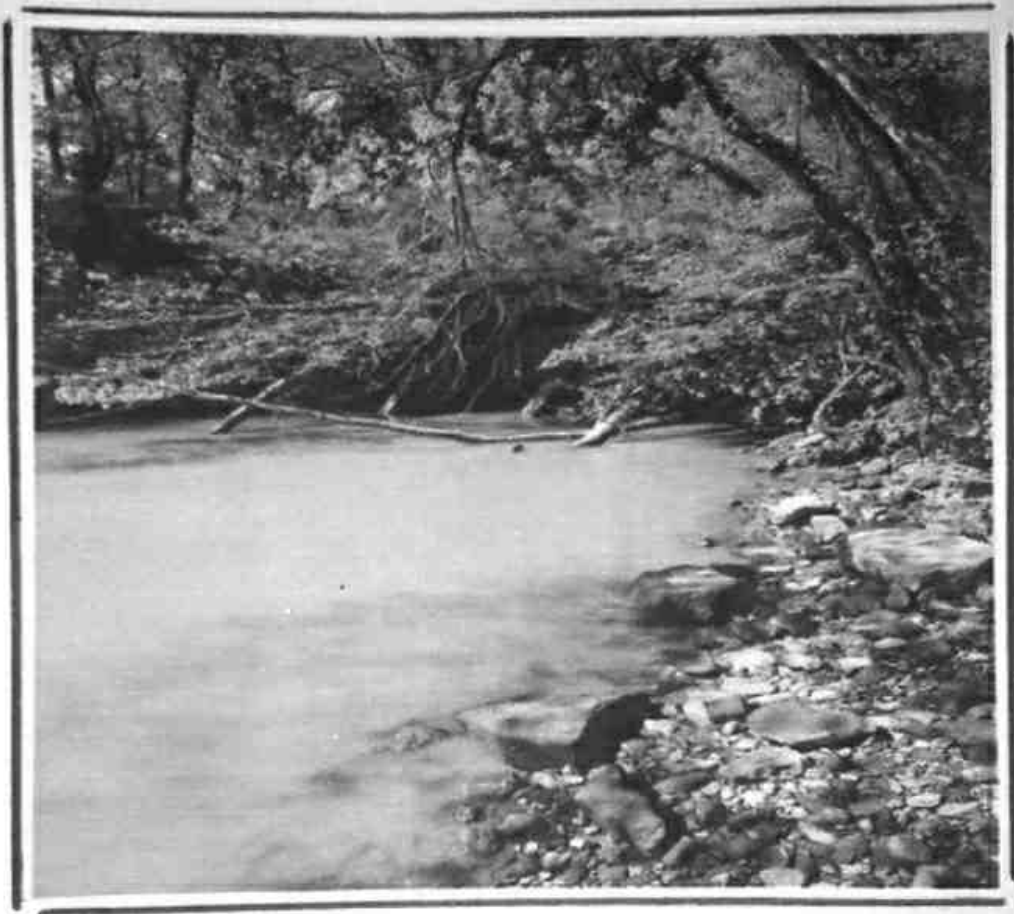
The Mechanism of Eutrophication

Eutrophication most commonly arises from the oversupply of nutrients, most commonly as nitrogen or phosphorus, which leads to overgrowth of plants and algae in aquatic ecosystems. After such organism die, bacterial degradation of their biomass results in oxygen consumption, thereby creating the state of hypoxia.

The sources of these excess phosphates are phosphates in detergant, industrial / domestic run-offs, and fertilizers. With the phasing out of phosphate - containing detergents in the 1970s, industrial / domestic run-off and agriculture have emerged as the dominant contributors to eutrophication.

Cultural Eutrophication

Cultural or anthropogenic eutrophication is the process that speeds up natural eutrophication because of human activity. Due to clearing of land and building of towns and cities, land runoff is accelerated and more nutrients such as phosphates and nitrate are supplied to lakes and rivers, and then to coastal estuaries and bays.

Eutrophication in a Canel

Lakes and Rivers

When algae die, they decompose and the nutrients contained in that organic matter are converted into inorganic form by microorganisms. The depleted oxygen levels in turn may lead to fish kills and a range of other effects reducing biodiversity. Nutrients may become concentrated in an anoxic zone and may only be made available again during autumn turn-over in conditions of turbulent flow. The dead algae and the organic load carried by the water inflows in to the lake settle at its bottom and undergoes anaerobic digestion releasing greenhouse gases such as methane and CO_2. Some of the methane gas may be oxidised by anaerobic methane oxidation bacteria such as Methylococcus capsulatus which in turn may provide a food source for zooplankton.

Studies conducted in the Experimental Lakes Area in Ontario have shown a relationship between the addition of phosphorus and the rate of eutrophication. This is because the growth of nitrogen-fixing cyanobacteria is reliant on phosphorus concentration levels in lakes. Humankind has increased the rate of phosphorus cycling on Earth by four times.
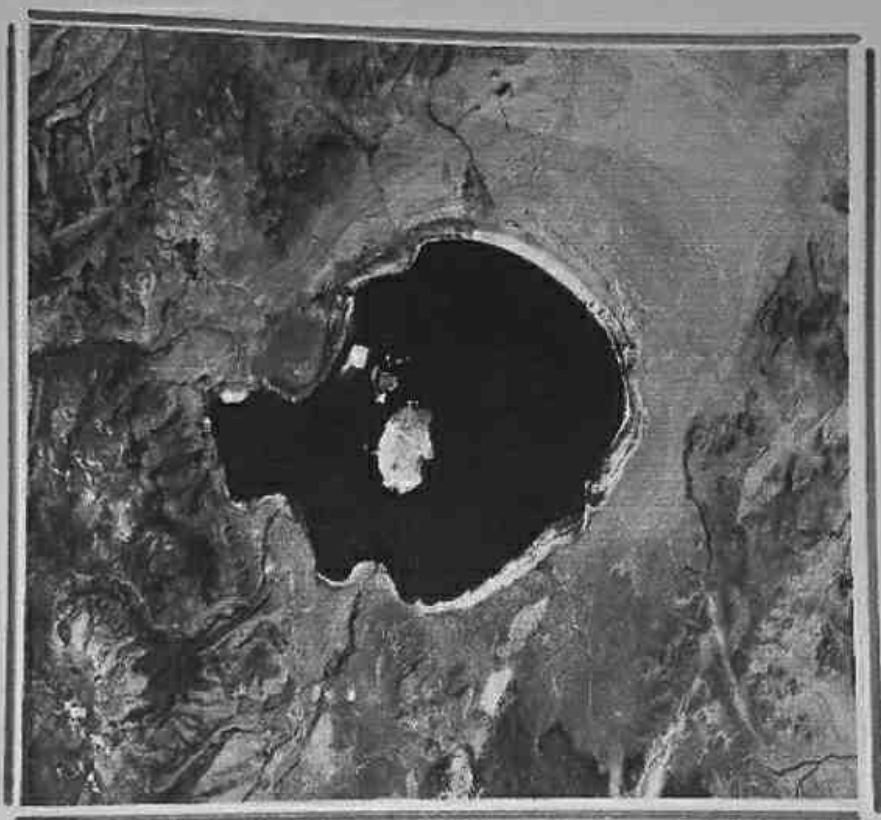
The eutrophication of the Mono-lake
which is a cyanobacteria-rich soda lake

Sources of high nutrient run off

characteristics of point and non-point Sources of chemical inputs (modified from Novonty and Olem 1994)

point Sources

- Wastewater effluent (municipal and Industrial)
- Runoff and leachate from waste disposal Systems.
- Runoff and infiltration from animal feedlots.
- Runoff from mines, oil fields, unsewered industrial sites.
- Overflows of combined Storm and Sanitary Sewers
- Runoff from construction sites less than 20,000 m² (2,20,000 ft²)
- Untreated Sewage

Non-point Sources

- Runoff from agriculture due to fertilizers and Pesticides / irrigation

- Runoff from Pasture and range

- Urban runoff from unsewered areas

- Septic tank leachate

- Runoff from Construction sites > 20,000 m² (220,000 ft²)

- Runoff from abandoned mines

- Atmospheric deposition over a water surface.

- Other land activities generating Contaminants.

    In order to gauge how to best prevent eutrophication from occuring, specific sources that contribute to nutrient loading must be identified. There are two common sources of nutrients and Organic matter : point and nonpoint sources.

(42)

Prevention and Reversal

Eutrophication poses a problem not only to eco-systems, but to humans as well. Reducing eutro-phication should be a key concern when consi-dering future policy, and a sustainable solution for everyone, including farmers and ranchers, seems feasible.

While, eutrophication does pose problems, humans should be aware that natural runoff (which causes algal blooms in the wild) is common in ecosystems and should thus not reverse nutrient concentra-tions beyond normal levels. Cleanup meas-ures have been mostly, but not completely, successful.

One proposed solution to stop and reverse eutrophication in estuaries is to re-store shellfish populations, such as oysters and mussels. Oyster reefs remove nitro-gen from the water column and filter out suspended solids, subsequently reducing the likelihood or extent of harmful algal blooms or anoxic conditions. In the United States, shellfish restoration projects have been con-ducted on the East, West and Gulf Coasts. See nutrient pollution for an extended explana-tion of nutrient remediation using shellfish.

Application of a Phosphorus Sorbent to a lake

Geo-engineering in lakes

Geo-engineering is the manipulation of bio-geochemical Processes, usually the Phosphorus cycle, to achieve a desired ecological response in the ecosystem. Geo-engineering techniques typically uses materials able to chemically inactive the Phosphorus available for organisms (i.e. Phosphate) in the water column and also block the phosphate release from the Sediment (internal loading).

Phosphate is one of the main contributing factors to algal growth, mainly cyanobacteria, so once phosphate is reduced the algal is not able to overgrow. There are several Phosphate Sorbents in the literature, from metal salts. (e.g. alum, aluminium sulfate,) minerals, natural clays and local soils, industrial waste products, modified clays (e.g lanthanum modified bentonite) and others. The phosphate Sorbent is commonly applied in the surface of the water body and it sinks to the bottom of the lake reducing phosphate, Such Sorbents have been applied worldwide to manage, eutrophication and algal bloom.

Rocks Stained by acid mine drainage on Shamokin Creek

Acid mine drainage

Acid mine drainage, acid and metalliferous (AMD), or acid rock drainage (ARD) is the outflow of acidic water from metal mines or coal mines.

Acid rock drainage occurs naturally within some environments as part of the rock weathering process but is exacerbated by large-scale earth disturbances characteristic of mining and other large construction activities, usually within rocks containing an abundance of sulfide minerals. Areas where the earth has been disturbed (e.g. construction sites, sub-divisions), the liquid that drains from coal stocks, coal handling facilities, coal washeries, and coal waste tips can be highly acidic, and in such cases it is treated as acid rock drainage. This liquid often contains toxic metals, such as copper or iron.

The same type of chemical reactions and processes may occur through the disturbance of acid sulfate soils formed under coastal or estuarine conditions after the last major sea level rise, and constitutes a major environmental hazard. Similar

(45)

Nomenclature

Historically, the acidic discharges from active or abandoned mines were called acid mine drainage, or AMD. The term acid rock drainage, or ARD, was introduced in the 1980s and the 1990s to indicate that acidic drainage can originate from sources other than mines. For example, a paper presented in 1991 at a major international Conference on this subject was titled. "The Prediction of Acid Rock Drainage — Lessons from the Data base".

In cases where drainage from a mine is not acidic and has dissolved metals or metalloids, or was originally acidic, but has been neutralized along its flow path, then it is described as "neutral mine drainage", "mining-influenced water" or otherwise.

None of these other names have gained general acceptance.

Both AMD and ARD refer to low pH or acidic waters caused by the oxidation of sulfide minerals, through ARD is the more generic name.

(46)

Rio Tinto in Spain

EFFECT

Effects on PH

Water temperatures as high as 47°C have been measured underground at the Iron Mountain Mine, and the PH can be as low as -3.6.

Organism which cause acid mine drainage can thrive in waters with PH very close to zero. Negative PH occurs when water evaporates from already acidic pools thereby increasing the concentration of hydrogen ions.

About half of the coal mine discharges in Pennsylvania have PH under 5. However, a portion of mine drainage in both the bituminous and anthracite regions of Pennsylvania is alkaline, because limestone in the overburden neutralizes acid before the drainage emanates.

Acid rock drainage has recently been a hindrance to the completion of the construction of Interstate 99 near state college, Pennsylvania. However this acid rock drainage didn't come from a mine; rather, it was produced by oxidation of pyrite-rich rock which was unearthed during a road cut and then used as fill material in the I-99 construction. When the phenomena is the result of earth moving operations under other than mining it is sometimes called "Acid Rock drainage?"

Yellow boy

When the pH of acid mine drainage is raised past 3, either through contact with fresh water or neutralizing minerals, previously soluble iron (III) ions precipitate as iron (III) hydroxide, a yellow-orange solid colloquially known as yellow boy. Other types of iron precipitates are possible, including iron oxides and oxyhydroxides, and sulfates such as jarosite. All these precipitates can discolor water and smother plant and animal life on the streambed, disrupting stream ecosystems (a specific offense under the fisheries act in Canada).

The process also produces additional hydrogen ions, which can further decrease pH. In some cases, the concentrations of iron hydroxides in yellow boy are so high, the precipitate can be recovered for commercial use in pigments.

Prevention and mitigation

There are three basic ways to limit acid mine drainage: Prevent sulfuric acid from forming, neutralize the acid after it forms, or collect runoff/seepage to contain the acid.

To stop the formation of sulphuric acid, the waste rock and and tailings from a mine must be prevented from coming in contact with oxygen. Oxygen can come from either the following water or air. However the use of neutralization solution causes a significant increase in the "total dissolved solids (TDS)" in the water, potentially resulting in negative impacts on both aquatic life and human health. Another major problem with active water treatment is that it often needs to continue forever. For example, the Berkeley pit in Butte, Montana is a massive open pit mine that is slowly filling with very acidic water.

One form of passive water treatment involves creating of artificial wetlands where natural microbial processes can be encouraged to precipitate out some of the metals released by the acid. Of note for future mine development, 90% of the mines that predicated "low" acid mine drainage potential had acid mine drainage problems at the time of the study.
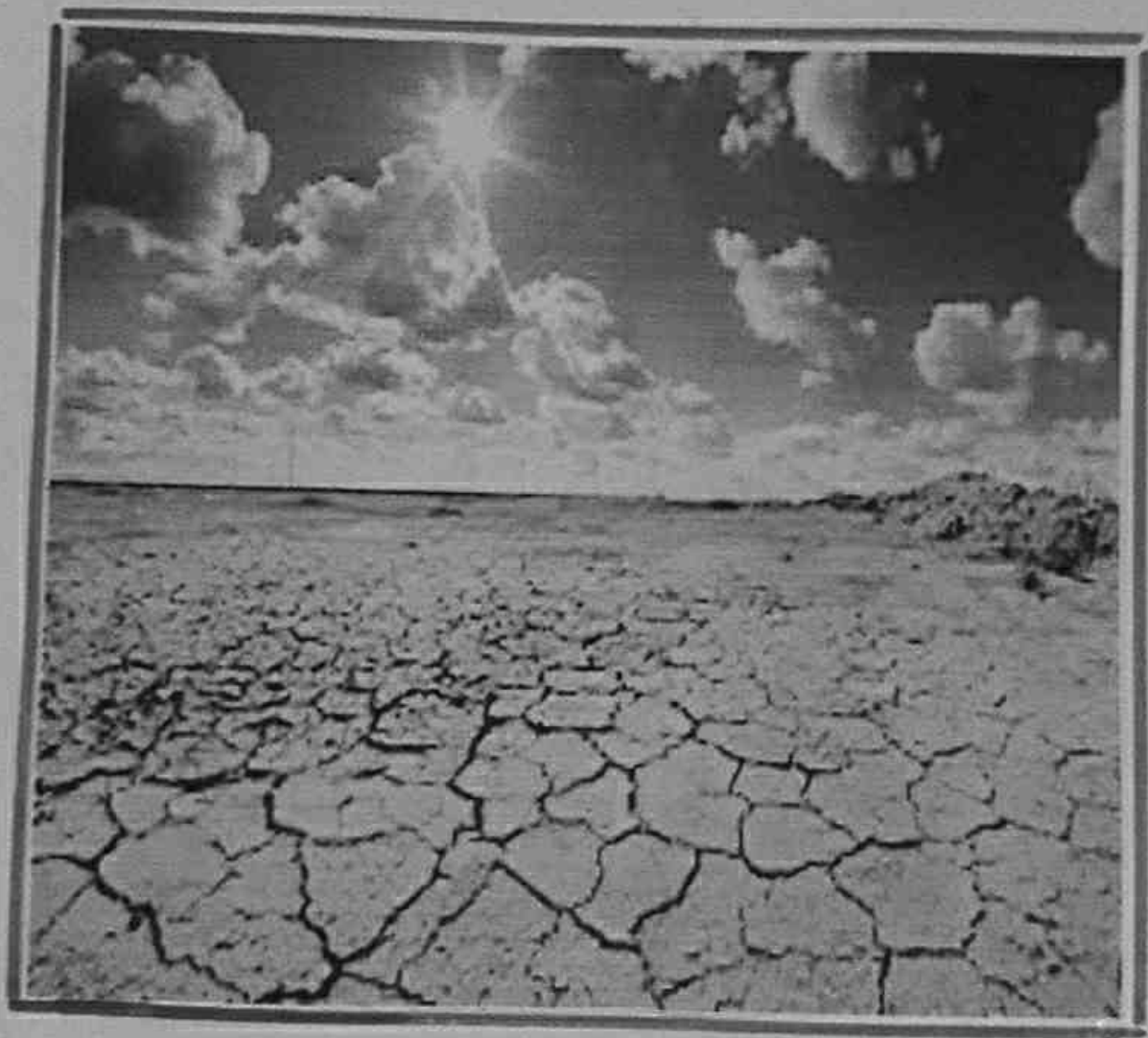
Desertification

Desertification has been described as "the greatest environmental challenge of our time" and climate change is making it worse. While the term may bring to mind the windswept sand dunes of the sahara or the vast salt pans of the Kalahari, it's an issues that reaches far beyond those living in and around the world's deserts, threatening the food security and livelihoods of more than two people, two billion people. The combined impact of climate change, land mismanagement and unsustainable freshwater use has seen the world's water-scare regions increasingly degraded. This leaves their soils less able to support crops, livestock and wildlife. This week, the Intergovernmental Panel on climate change (IPCC) will publish its special report on climate change and land.

      The reports, written by hundred of scientists and researchers from across the world, dedicates one of its seven chapters solely to the issue of desertification.

Definitions of words

As recently as 2005, considerable controversy existed over the proper definition of the term, "desertification". Helmut Geist (2005) identified more than 100 formal definations. The most widely accepted of these was that of the Princeton University· Dictionary which defined it as " the process of fertile land transforming into desert typically as a result of deforestation, drought or improper/inappropriate agriculture".

United Nations Convention to combat Desertification (UNCCD) as " land degradation in arid, semi- arid and dry sub-humid regions resulting from various factors, including climatic variations and human activities."

There exists also controversy around the sub-grouping of types of desertification, including, for example, the validity and usefulness of such terms as " man-made desert" and "non-pattern desert".

Areas affected

Drylands occupy approximately 40-41% of Earth's land area and are home to more than 2 billion people. It has been estimated that some 10-20% of the drylands are already degraded, the total area affected by desertification being between 6 and 12 million square kilometers, that about 1-6% of the inhabitants of drylands live in desertified areas, and that a billion people are under threat from further desertification.

As of 1998, the then-current degree of southward expansion of the Sahara was not well known, due to a lack of recent, measurable expansion of the desert into the Sahel at the time.

The United Nations Convention (UNC) says that about six million Sahelian citizens would have to give-up the desertified zones of Sub-Saharan Africa for North Africa And Europe between 1997 and 2020. South-America is another affected area by desertification, as 25% of the land is classified as drylands.
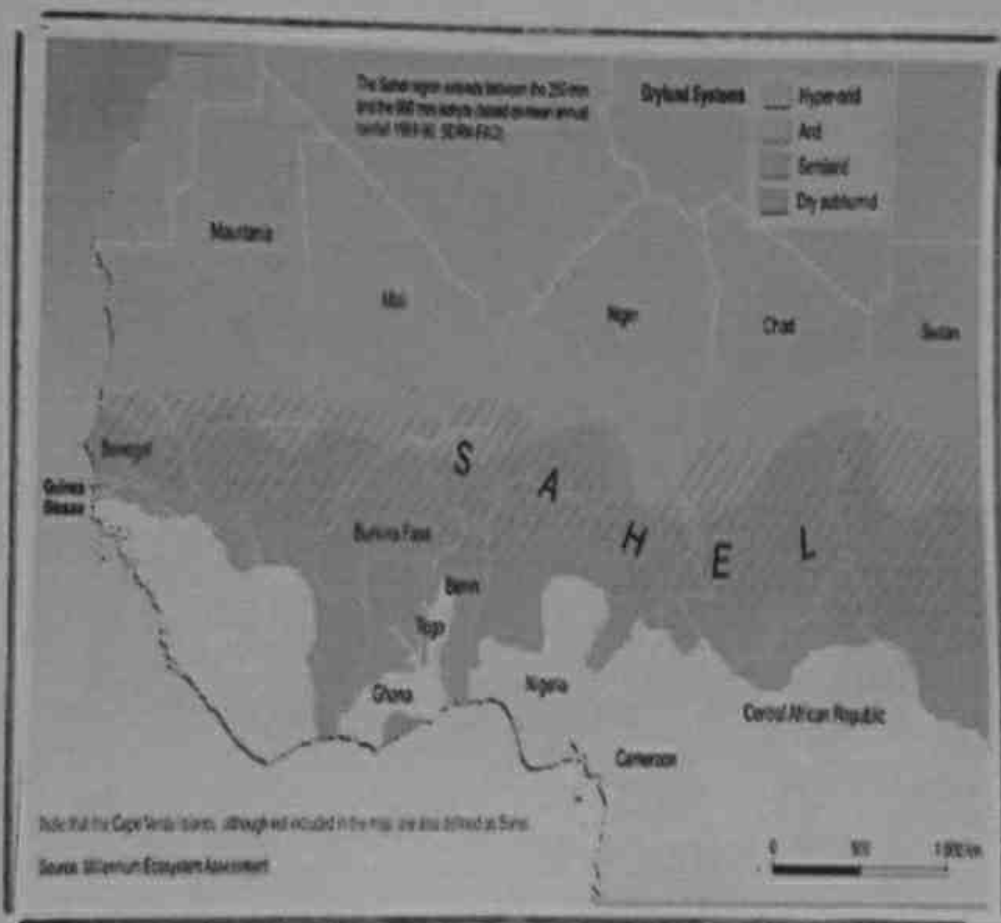
SAHEL

The Sahel is the semi-arid transition region between the Sahara desert to the north and wetter regions of equatorial Africa to the South. It extends from the Atlantic in the west to the Indian ocean in the east. It has high variability of rainfall, and the land consists of stablized ancienct sand seas. It is one of the poorest and most environmentally degraded areas on earth.

The drying of the Sahel in the late 20th century caused widespread famine that attracted world-wide attention, including the united Nations Conference on Desertification (UNCOD) in Nairobi, Kenya in 1977, the 1993 convention to combat Desertification, the 2006 International year of the Desert and Desertification, and the Millennium Ecosystem Assessment.

Mix of Causes

According to a recent report from the Intergovernmental Science-policy platforms on Biodiversity and Ecosystem Services (IPBES). "land degradation is almost always the result of multiple interacting causes." The direct causes of desertification can be broadly divided between those relating to how the land is or isn't - managed and those relating to the climate. There are also many underlying cause as well, the IPBES report notes, including "economic, demographic, technological, institutional and cultural drivers.

Solutions

Limiting global warming is therefore one of the key ways to help put a break on desertification in future. Stopping desertification before it starts requires measures to "protect against soil erosion, to prevent vegetation loss, to prevent overgrazing or land mismanagement. However, there is also a fairness issue if the land users upstream are paying for the new trees and those downstream are receiving the benefits at no cost.
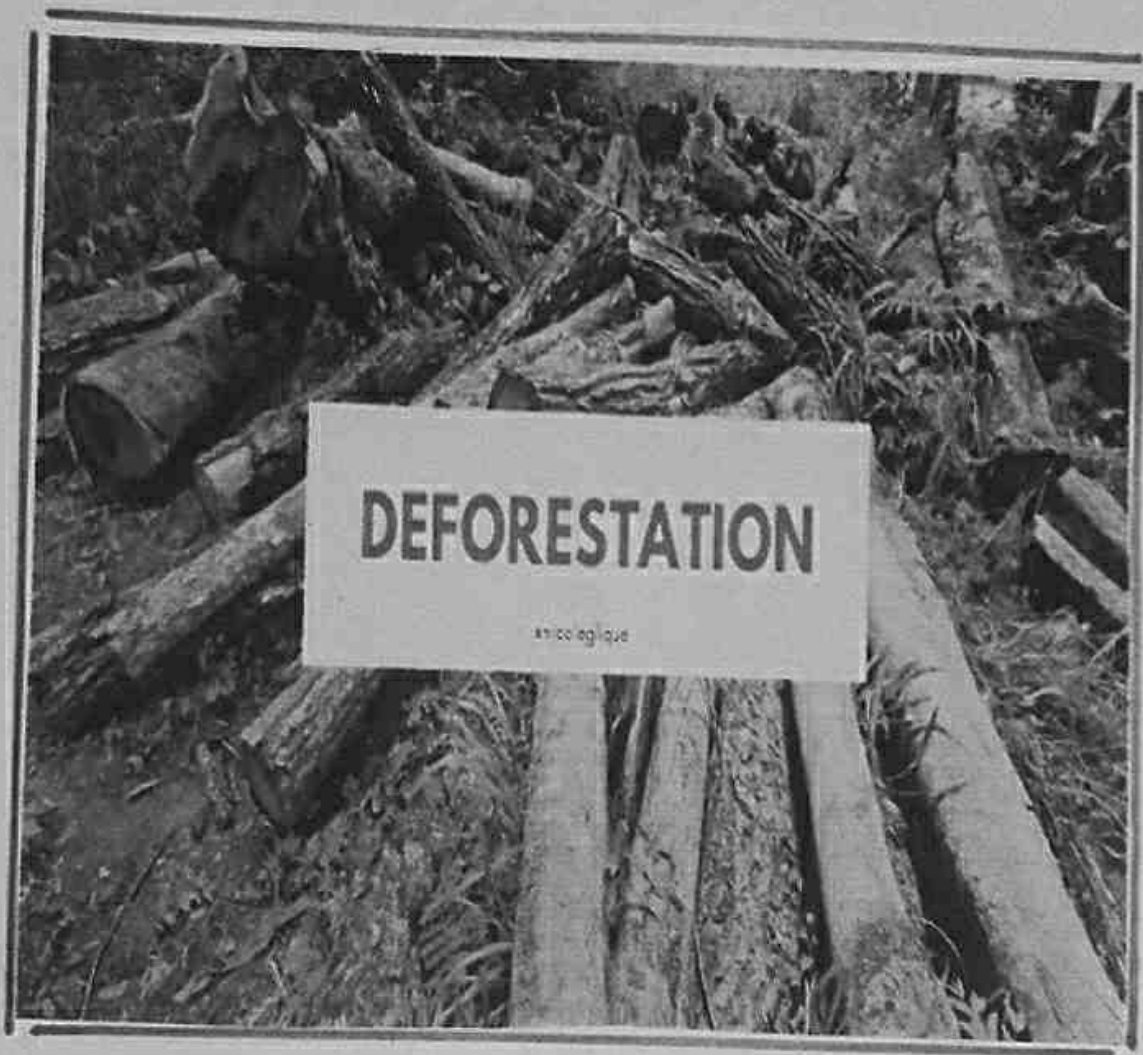
DEFORESTATION

en ecologique

Deforestion

Deforestation is the permanent removal of trees to make room for something besides forest. This can include clearing the land for agriculture or grazing, or using the timber for fuel, construction or manufacturing.

Forests cover more than 30% of the Earth's land surface, according to the World Wildlife fund. These forested areas can provide food, medicine and fuel for more than a billion people. Worldwide, forests provide 13.4 million people with jobs in the forest sector, and another 41 million people have jobs related to forests.

In North America, about half the forests in the eastern part of the continent were cut down for timber and farming between the 1600s and late 1800s, according to National Geographic.

Today, most deforestion is happening in the tropics. A 2017 report by scientists at the University of Maryland showed that the tropics lost about 61,000 square miles (158,000 square kilometers) of forest in 2017 — an area the size of Bangladesh.

Effect

From forests can be found in the tropics to high-latitude areas. They are home to 80% of terrestrial biodiversity, containing a wide array of trees, plants, animals and microbes, according to The World Bank, an international financial institution. Some places are especially diverse- the tropical forests of New Guinea, for example, contain more than 6% of the World's species of plants and animals.

Forests provide more than a home for a diverse collection of living things; they are also an important resource for many around the world. In countries like Uganda, people rely on trees for firewood, timber and charcoal. Over the past 25 years, Ugana has lost 63% of its forest cover, Reuters reported.

The UN's 2018 state of the World's forest report found that over half the global population relies on forested watersheds for their drinking water as well as as water used for agriculture and industry. Deforestation not only removes vegetation that is important for removing carbon dioxide from the air, but the act of clearing the forest also produces greenhouse gas emissions. The Food and agriculture of the united Nation says that deforestation is the second-leading cause of climate change (The first is the burning of fossil fuels.)

Reason forests are destroyed:-

The world Bank estimates that about 3.9 million square miles (10 million square km) of forest have been lost since the beginning of the 20th Century. In the past 25 years, forest shrank by 502,000 square miles (1.3 million square km) - an area bigger than the size of South Africa. In 2018, The Guardian reported that every second, a chunk of forest equivalent to the size of a soccer field is lost.

The Union of concerned scientists (ucs) reports that just four commodities are responsible for tropical deforestation: beef, soy, palm oil and wood products. UCS estimates than an area the size of Switzerland (14,800 square miles, or 38,300 square km) is lost to deforestation every year.

Natural fires in tropical forests tend to be rare but intense. As of August 2019, more than 80,000 fires burned in the Amazon, an increase of almost 80% from 2018, National Geographic reported. Many forests are cleared to make way for palm oil plantations. Palm oil is the most commonly produced vegetable oil and is found in half of all supermarket products. Its cheap and versatile and can be added to both food and personal products like lipsticks and shampoo.

Deforestion Solution

Developing alternatives to deforestation can help decrease the need for tree clearing. For example, the desire to expand the amount of land used for agriculture is an attractive reason to defore-st an area. But if people adopted sustainable farming practices or employed new farming techniologies and crops, the need for more land might be diminished, according to the UN's Sustainable forest management Toolbox.

forests can also be restored, through replanting trees in cleared areas or simply allowing the forest ecosystem to regenerate over time. The goal of restoration is to return in the forest to its original state, before it was cleared, according to the U.S. Forest Service. The sooner a cleared area is reforested, the quicker the ecosystem will reestablish, carbon will be sequestered and soils will be replenished.

Everyone can do their part to curb deforestation. We can buy certified wood products, go paperless whenever possible, limit our consumption of products that use palm oil and plant a tree when possible.

CONCLUSION

It was a wonderful learning experience for me while working on this project. This project has developed my thinking skills related the the topics. This Project gave me real insight into the Environmment Science World.

We the citizen only can blame our environmment that we have less resources and our government. When our environmment get polluted. But after my survey, I get to know that our government has taken many major steps to protect our environment. But we, the citizen of our country does not follow any of them which is the only reason of the degradation of our environment.

I enjoyed each and every bit work I had put into this project.

Thank you

BIBLOGRAPHY

To complete this project, I needs to know many things otherwise my project won't get completed. So, at last I want to mentioned all the sites which I had used to complete this project.

Following books are used to have an idea about "Environment Science" Statements :

Environmental Studies (our Knu 1st sem.) – by Somnath Kundu & Biplab Bandyopadhyay.

Followings links have been used in the completion of this file :-

https://www.omicsonline.org
https://www.livescience.com
https://www.carbonbrief.org
https://en.wikipedia.org
https://www.google.com

(60)

Acknowledgement

In the accomplishment of this project Successfully, many people have best owned upon me their blessings and the heart pledged support, this time I am utilizing to thank all the People who have been concerned with this project.

Primarily I would thank God for being able to complete this project with Success. Then I would like to thank my teacher Debdyuti Sengupta of BIDHAN CHANDRA COLLEGE, Asansol, whose valuable guidance has been the ones that helped me patch this project and make it full proof Success. Her suggestions and her instructions have served as the major contributor towards the completion of the project.

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BIDHAN CHANDRA COLLEGE

B.Sc. Hons 4th Sem

Topic - Agro- Based Industries In India

_Name - Akash Marimdal

Reg. no - KNUREG 18103000465

Roll. no - 103180312201 8004

Subject name - Economic and Social geography.

-: CONTENT :-

Agro - Based - Industry.- In India

🪟 Introduction :-

Industry are part of the second activity Second activitys conrerds raw material into products of more value. to people. Industries refer to economic activities encovered with the production of goods, entraction of services and provision.

Agro based Industries use plants and animal based products as their raw materials, Enample food processing vegetable oil, cotton textile. dairy products and lether industries.

Agriculture and industry are integral components of the development process due to their nudal relationship as agriculture provides inputs to the industries and output of the industry is used in agriculture. to expand production. There are many industries are depand on agriculture production. Agro based industry mey-be classifed two category

(1) food processing industries.

(11) Non-food processing industries.

Objectives :-

(I) To study the scenario of agro based industries.

(II) To identify the importance of agro based industries.

(III) To understand the challenges of agro based industries.

(IV) To find out the strategy for agro based industries.

Importance of Agro-Based Industries :-

(i) Agriculture sector is the mainstay of Indian economy.

(ii) Total production of agriculture sector is US$ 366.92 billion. Indian is 2nd larger producer of agriculture product.

(iii) Agriculture employs 45% of the working population.

(iv) In some parts of Asia and Africa, over 80% of the labour force is engaged in agriculture.

(v) Without agriculture there could be no cities universities factories ar officers.

Typs Of Agro-Based Industry :-

The agro-based Industry includes industries related to textile, sugar, paper and vegetable oil. These industries use agriculture products as their raw materials. Textile industry is the largest industry in the organized sector.

It comprises of :-

(1) Cotton textile
(11) wollen textile
(111) silk Textile
(1v) Synthetic Textile
(v) Jute Textiles Industries.

Textile Industry :- The textiles industry plays production Presence in the Indian economy. It is the only industry which is self-reliand. from raw material to the highest value added Products, viz.

(A) Cotton Textiles :-

Cotton accounts for a major portion of the total fabric producted. The first successful cotton textile mill was set up at Mumbai by Parsi entrepreneurs.

Geographical Distribution :-

□ **Mumbai:** (1) Location of Port facilitated import of capital goods, chemicals etc.

(11) Mumbai got progressively well connected through rail and road links with cotton growing areas Gujrat and Maharashtra in the interior.

■ **Maharashtra:** with Mumbai as the focal point, the industry has to Shalapur, Kolhapur, Pune, Saugli and Nagpur.

■ **West Bengal :** Kalkata, Howraby Sarampure, murshidabad and Saikia.

Suitable Condition for Cotton Textile :-

Cotton is soft pure cellulase fibre. India is one of the lagest producers of cotton in the world. The ideal conditions for the production of cotton are:-

(1) **Climate:** cotton grows well in warm and moist climate where summmer is lay and where there is salinity in the soil.

(11) **Temperature :-** cotton grown well in $24°C$. But cotton bursts and high temperature is injurious.

(11) **Rainfall:** 60-100 cm rainfall is essential for the ... ... of Cotton.

(iv) Soil : Loamy soil mixed with lime and potash is good for cotton. Cotton grows well in Black cotton soil which is sticky in nature and has water retentive capacity.

(v) Land : Plain lands ar gentle slope lands are good for cotton production. Drainage is necessary for the cultivation of cotton.

Problems of Cotton Textiles Industry :-

(i) There is shortage of raw material, Particular of long staple Cotton.

(ii) The industry faces constant threats of sickness and consequent closure, On account of management Problems.

(iii) India has the lowest Percentage in the world of automatic looms to total loomage.

(iv) Indequacy of Power and machinery is another problems of the industry.

Distribution of Cotton Production In India

N

	LEGEND
	Cotton Production states

(B) Jute Textile :

The first modern Jute mill was set up at Rishra near kalkata in 1855. It was Powerloomed in 1859 and included both spinning and weaving after independence, this sector made rapid progress as an import oriented industry But a peculiar problem areas Jute due to the Partition of the country.

Suitable Condition for Jute Textile :-

Jute is a cash crop of hot and moist climate. The climate condition for Jute cultivation is mentioned below :-

(i) Temperature : 25°c is ideal for Jute cultivation.

(ii) Rainfall : 150cm to 200cm rainfall is essential for Jute cultivation, moisture in the wind is neccessary.

(iii) Soil : New alluvial or lomy soil or river basin is ideal for Jute cultivation.

(iv) Land : Plain land is ideal for Jute cultivation.

Problems of the Jute Industry :-

(i) The industry is facing stiff competition from modern packing material.

(ii) Newly established factories and improved machines.

(iii) India is not self suffient in raw material.

(iv) The mills and machinary in jute sector are obsolded and need technology upgadation.

Distribution of Jute Production In India

N
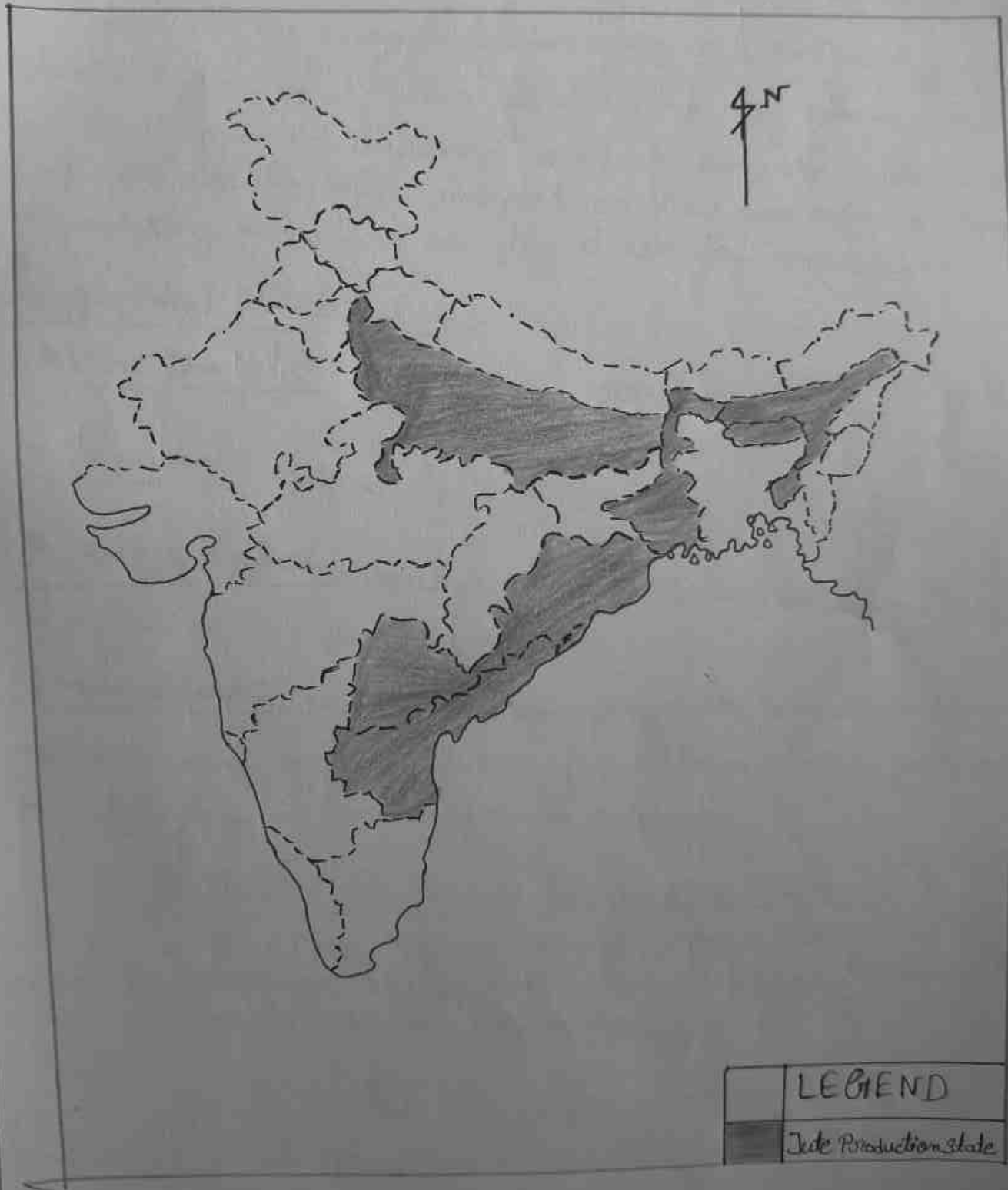
(e) Woollen Textile:

The first woollen textile mill was set up in 1876 at Kanpur, because Kanpur was the Principle depoat for the British Indian Kanpur was the Principle Indian army. But the industry did not flourish because of a short winter and long summer in Indian leading to an inadequate demand. Also, the textiles produced were of poor quality. After independence, there was rapid development of the industry mainly as an import oriented industry.

Geographical Distribution:-

- **Uttar Pradesh:** Kanpur, Agra, Mirzapur.

- **Rajasthan:** Jaipur, Jodhpur, Bikaner.

- **Madhya Pradesh:** Garibar-Gujarat Jamnagar, Ahmede-bad dabodara.

- **Maharashtra:** Mumbai Karnataka Bengaluru Jammu and Kashmir

The state is a large producer of handloom woollen goods and manufacturing is centred around Srinagar.

Suitable Condition for Woollen Textile:-

Thermal Comfort is the condition of the mind that expresses satisfaction with the thermal environment and is assessed by subjective evaluation.

(1) Climate: The climate is determined by ambient temperature, wind speed, relative humidity and solar radiation.

Distribution of wool Industries In India

4 N

LEGEND	
◆	wool Industry

(ii) Merino wool is typically 3-5 inches in length and is very fine. The finest and most valuable wool comes from merinolog gets.

(iii) wool is also separated into grades bassed on the measurement of the wool's diameter in microns and also its style.

Problems of Woollen Textile Industry :-

(i) The size of the mills is small and productivity is loco.

(ii) Obsolate technology is still in use.

(iii) There is stiff competition from tanywool and synthetic yarn-wool min items.

Sugar Industry :-

Sugar production is known in India Since acient times, but modarn sugar industry in tho country developed in first decade of the twentieth century. Indian sugar industry is the second largest agro-based industry in India. After the cotton textile industry, the sugar industry is the most important agro-based industry in the India. It Provides employment to about 0.5 million skilled and unskilled workers constituting about 7.5% of the rural Population and about 45 million sugar come formars.

Distribution of sugar growing In India

N

	LEGEND
	Sugar Growing Area

Geographical Distribution :-

Uttra Pradesh :

The largest concentration is in the upper Ganga-Yamuna Doab, Rohilkhand areas which together produce about 70 percent of sugarcane produced in this state. Western part of the state froms the core of sugarcane production in the country.

Maharashtra :

Though Maharashtra is the second largest producer of Sugarcane in India, this state lays for behind U.P with respect to area and the production accounting only for about 13 per cant of the production of the country.

Karnataka :

Karnataka is the 3rd largest sugarcane producing state of India. Manalya, Mysore, Bijapur are important producing districts.

Tamil Nadu :

80% of the Production comes froms south Arcant Ambedkan, Salen, Tiruchirapali and coimbatore district.

Bihar :

Bihar is main sugarcane producing areas comprise a continuating of the main sugarcane producing belt of U.P. champaran, Groja, Saran, Muzaffarpur, Darbhanga and Patna are the main producing districts.

Suitable Condition for Sugar Industry :

The sugarcane productivity and Juice quality are Profoundly influenced by weather conditions Prevailing during the various crop-growth sub-Periods.

(i) Climate :

A fairy dry, sunny and cool, but Frost free season for ripening and harvesting moisture Percentage drops stedly throught the life of the sugarcane plant, from 83% in very young cone to 71% mature cane.

(ii) Rainfall :

A total rainfall between 110v and 150mm is adequate provided the distribution is right.

(iii) Temperature :

Growth is closely related to temperature. Optimum temparature for sprouting of stem cuttings is 32° to 38°c

(iv) Relative Humidity :

High humiulity favours rapid cane elongation during grand growth Paeiod. A modarate value of 45-65% coupled with limited water supply is fabourable the ripening phase.

Problems of Sugar Industry :-

(i) The high costs of Production are due to.

(ii) (a) Uneconomic nature of Production
      (b) Short crushing season.

(iii) Small, uneconomic units with obsolate technology are still functioning.

(iii) The Indian sugarcane has low sucrase content and gives Poor yield.

Distribution of leather Industry in India
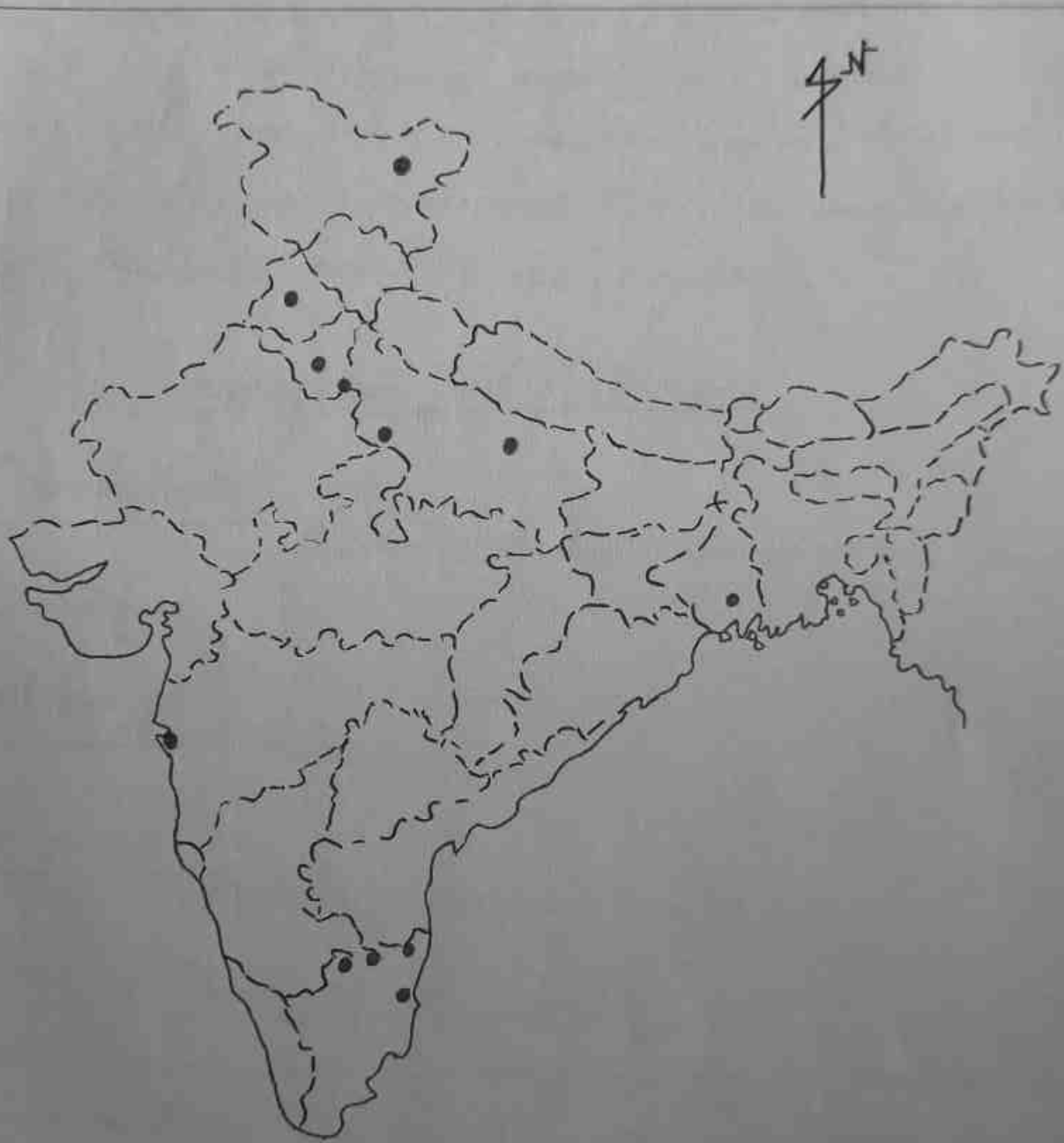
LEGEND	
●	leather Industries

Leather Industry :-

Indian Lether Industry has developed to a large extent and is the second largest producer next to china. Indian leather industry occupies a Proominent of its massive Potential for employment, growth and exports. Today this industry well marided recognition in international markets beside occupying a Proominent Place among the top seven foreign exchange earns of the country.

Geographical Distribution :-

Tamil Nadu :

chennai, Ambur, Vaniyambadi, Ranipet, Dindigul.

West Bengal :

Kalkata.

Hariyana :

Ambala, Gurgan, Panchkula.

Size of the Industry

Indian Leather industry today capacity to Produce 1776 million Pairs, 12 million Pairs of the upper non leather footware. 960 million Pairs of non-leather footwear's which includes shoes made of rubber, moulded pre and other material.

Percentage in world Market:-

Currently is one among the top 8 industries for export revenue generation in India holding 10% of the global raw material, and 2% of the global trade.

Latest Developments :

(i) The investment in the Indian Leather industry Stood at 410 million. Footware and their components account for about 25%. of india clatal leather Products exparts. There two market also offer for exparts of saddlar and harness.

(11) The Govt. of India for it 200-2003 foreign trade sector as a focus sector in view of its immense patential for export growth and generation of employment generation Prospects.

(111) Indian is one of the best destinations in the world far investing in the leather industry. India has a huge population of cattle and buffalo and the worlds goat and sheep Population.

(iv) India is the world's second largest Producer of footware, its Production estimated over 700 million pairs Per annum. At about US 300 million per year.

(v) The Govt. is also making efforts to implement various special focus intiative under the forgin trade Policy for the growth af leather sector.

Tea Industry:

Tea is an aromatic berege commonly prepared by pouring hot an bailling water over cured leaves of the camellia Simensis an evergreen shrub narde to East Asia. Tea cultivation in India first started in the middle of the 19th century in Darjeeling Assam and the Nilgiries.

Geographical Distribution:-

Assam:

The most prominent among the tea growing areas in India is Assam. It produces the most famous Assam tea brand. Assam regin holds the unique distinction of being the largest tea producing area in the world.

Wayanad:

This area is around 76 km away from dist Sea shore in Karala. Tea gardens in the wayanad. Nilgiri occupy an area of 55 square km.

Darjeeling:

Another must important regin among the tea growing areas in India is Darjeeling. Darjeeling produces tea which has a distinctive taste and aroma.

Sikkim:

The Temi Tea garden is the only tea garden in the north-eastern Indian state of Sikkim.

Nilgiri:

The Nilgiri have a distinctive place in the tea industry map of India. An area around 700 sqkm here.

Distribution of Tea Producing In India

LEGEND	
▩	Tea Producing states

Suitable Conditions for Tea Industry :-

(i) climate :

climatically tea belongs to the monsoon lands where high temperatures, long growing season and heavy rainfall help the growth of tea plants.

(ii) Relief :-

Almost all the commercially managed tea Plantations are located in the highland and on hill slopes where the natural drainage is good. Mountain slopes have been adopted for tea gradens all over the tea regions of the monsoon lands.

(iii) Soils :

Tea is grown in variety of soils. The best how ever is a light friable loam with prous subsoil which permits a free percolation of water.

(iv) Labour :

Tea cultivation and Processing are labour-intensive tasks. The work of field all the year round on tea estates.

Problems of Tea Industry :-

(i) Decline in tea Price has seen a steady over the years.

(ii) Leving aside the natives, most of the workers in the tea garden in Assam and Bengal are the later Part of the 19th century.

(iii) The problem of storage.

(iv) Unfavourable climatic conditions for tea plantation owing to seventy or very heavy rainfall have badly affected the tea industry.

CONCLUSION

- If rural development has to gain strengthen economic and social life of the rural. Comprising small and marginal farmers land less labourers, tenants and other weaker sections must be improved through providing them with subsidary occupations.

- The agro based industry offer a wide and reliable field of promotional occupation, diversification in villages and broadening the base of economic operation through supplementary occupations.

- Setting up an _agro - based industry is a great business idea_, but like all other business. To make more profits, you should plant your industry at a good location, choose to make products which can get sold easily and try to hire perssions which are very much skilled and educated..

BIDHAN CHANDRA COLLEGE

B.Sc. Hons 4th sem

Topice – Dualism in Geography.

-Name – Akash Mondal

Reg. no – KNUREG 18103000465

Roll no – 103180312201 8004

Subject name – Geographical thought

Dualism and Dichotomies in Geography

Introduction :→

Geographers throughout the history of geography have been confronted with the methodological Problem of dualism and dichotomy. In the delineation of the sphere of Geography, and the methodology to be adopted for its study, there have existed and still exist significant dichotomies like systematic versus regional geography, Physical versus human geography, and deterministic versus possibilistic geography. Dualism is however, not peculiar to geography it is shared by all sister disciplines, though in varying degrees. During the Period of Prehistory of geography, an obscure and vague dualism can be found in the writings of the Greek, Roman and Arab geographers. Herodotus laid emphasis on the Greek, Roman and on the description of the then major tribes and nationals and their physical surroundings, strabo concentrated on regional description, while Ptolemy stressed on mathematical geography. Hippocrades, Aristotle, Xerophone, Aryabhatla, AJ-Masudi and Ibn-Khaldun attempted to interpret the influence of Physical environment on the life-style of various Peoples.

Dualistic thinking in geography became more conspicuous during the post-renaissance period in Europe. Since then geography seems to have been visible into a number of mutually exclusive branches. These dichotomies an branching of the subject look quite logical. In this chapter, a brief appraisal of the more important dichotomies has been given. Though new dichotomies appear on the scene with passage of time, some of the most Prominent of them are as under:

Dualism and dichotomies in geography :-

1. General Geography versus Regional Geography.

2. Physical Geography versus Human Geography.

3. Historical Geography versus Contemparary Geography.

4. Study of formal sites versus study of Functional Locations.

Moreover, there is branching of the discipline in separate branches, e.g. geomorphology, climatalogy, hydrology, agriculture, land use and Population geography.

General Geography Versus Regional Geography :

The issue of general geography versus regional geography was most probably raised by Bernhard varen, known as varenius, in the 17th Century. This Period is often termed as the classical period of the modern geographical thought. varenius recognized the two main division of geography — general or universal and special or particular. This branching of the subject is known as general geography versus particular geography. systematic geography deals with one or a few aspects of the human environment or the human Population and study their varying performance in the world or over a predefined. It was believed to be the noblest of ends of scientific enquiry in the initial development of geography. Gradually, all studies of a generalistic nature acquired the status of systematic geography, while the special or Particular studies were described as regional geography. Regional geography, on the other hand, has not moved out of the ambit of particular studies. Regional geography in the traditional sense seeks to bring together in an areal setting various matters which are treated separately in topical geography. Regional geography is the study of the geography of regional. Regional geography is often distinguished by its interest in a specific situation in a Particular locality" and has been hailed as " the highest form of the geographer's art" (Hart 1982). It was, however mainly restricted to Physical geography which could be understood through natural laws. On the Contrary, special geography was primarily intended

as a description of individual countries and world regions. It was difficult to establish laws in special geography where human beings are involved, whose behaviour is always unpredictable. Special geography, nevertheless, helped in the formulation of hypothesis and structured ideas.

After Varenius, the leading German scholar- Alexander von Humboldt - spelt out the difference between systematic and regional geography. Humboldt divided the subject matter of geography into uranography and geography. Uranography, according to him, is the descriptive astronomy, while geography deals with the interrelationship of phenomena that exist together in an area. He believed in inductive method and emphasized the importance of empirical method of research. In his introductory chapter to Kosmos, while categorically stressing the value of generalization in science, Humboldt writes.

The most important aim of all physical sciences is this, to recognize unity in diversity- to grasp nature's essence under the cover of outward appearances.... the purpose of this introductory chapter is to indicate the manner in which all phenomena and energies are revealed one entity.

Carl Ritter - a contemporary of Humboldt - was a teleologist. He stressed the need for a study of natural phenomena 'as a whole', as 'in parts', in order to comprehend the 'inherent plan'. Although he was convinced that there were laws, he was in an hurry to establish them. He conceived geography as an empirical science rather than one based on deduction from rational principles or a priori theory. He emphasized the fact that there is a coherence in the special arrangement of terrestrial phenomena. Areal phenomena are so interrelated as to give rise to the uniqueness of the areas as individual units. In brief, according to Ritter, geography was concerned with objects on the earth as they exist together in an area. He studied areas synthetically, i.e., in their totality, He believed in the centrality of regional geography. He felt that geography must rise above a mere description of a multitude of facts about a particular phenomenon. The goal of geography should be according to Ritter, ".... to get away from mere description to the law of the thing described; to reach not a mere enumeration of facts and figures, but the connection of place with place and the laws which bind together local and general phenomena of the earth's surface".

Ritter's ideas on the 'wholeness' of things were in accordance with the writings of W.F. Hegel (1770-1831), whose attitudes amounted to an attempt to comprehend the entire universe, to know the infinite and to see all things in God. The scientific stance of Ritter was teleological. He did not regard the shape of continents as accidental but rather as determined by God so that their form and location enabled them to play the role designed by God in the development of man. "My system builds on facts, not on philosophical arguments", he said in a letter. The collection of facts was not an end in itself, the systematization and comparison of data, region by region, would lead to a recognition of unity apparent diversity. The plans of God, which give purpose and meaning, could only be discovered by taking into account all facts and relationships in the world as objectively as possible.

In the light of the scholarly attempts of Humboldt and Ritter, the scientific organization of knowledge completes itself in stages: first an accurate and detailed inventory of all facts about a single aspect is prepared, and secondly, these facts are integrated with a coherent and intelligible body of knowledge where facts about some particular system and are "subsumed under a number of laws" which express a genetic relationship. To quote Humboldt:

In proportion as laws admit of more general application as sciences mutually enrich each other, and by their extension become connected together in more numerous and more intimate relations, the development of general truths may be given with conciseness devoid of superficiality. On being first examined, all phenomena appeared to be isolated and it is only by the result of multiplicity of observations, combined with reasons, that we are able to trace the mutual relations existing between them.

The above lines from Humboldt reveal the essential character of post-renaissance view of geography. Humboldt and Ritter were inspired by an overriding concern for the universal for the then contemporary science. The contemporary science in astronomy and physical sciences was characterized by the proliferation of universally applicable laws. Geography could not remain immune to the prevailing tendencies. Thus, Humboldt was seriously engaged in the development of

Systematic physical geography, while Ritter, to a considerable extent, was a regional geographer who gave weight to man as an important component of the physical surroundings.

After Carl Ritter, Ferdinand von Richthofen defined geography. In his opinion, the purpose of geography was to focus attention on the diverse phenomena that occur in interrelationship on the surface of the earth. The methodology he suggested for the study of geography was that elements of physical setting of a region be discussed and then the adjusment of man in that setting be examined. Richthofen also emphasized the point that regional geography must be descriptive to highlight the salient features of a region. General geography, he left, deals with the spatial distribution of individual phenomenon in the world.

Geography after Humboldt, Ritter and Richthofen in Europe and America was dominated by Friedrich Ratzel (1844-1904). Before Ratzel, the foundation of systematic geography was laid by Humboldt and that of regional geography by Ritter. In his anthropological studies, he liked to proceed with a priori hypothesis and laws and applied them to specific cases. He applied Darwin's concept to human societies. This analogy suggested that groups of human beings must struggle to survive in particular environments as much as plant and animal organisms do. This marked a departure from the integrative morphological approach of Humboldt. After Ratzel, Alfred Hettner - a leading German scholar- claimed that geography is an idiographic rather than monothetic science. He considered man as an integral part of nature of an area. His approach was, however, deductive giving more importance to elements of physical environment. The inductive method and empirical research got derived in France. Vidal de Lablache discarded the Ratzelian deductive approach and extensively employed specific studies for drawing conclusions of a general nature, which made the understanding of particular and unique attributes the most cherished goal of geographical enquiry.

Vidal de Lablache, in his works, attempted a harmonious blending of physical and human felsures and tried systhesis of pays. According to vidal, man and nature are inseparable, and it is not possible to distinguish the influence of man on nature from that of nature on man. The two influences fuse. The study of such region, each one of which is unique, shall

be the task of a geographer. He, therefore, argued for regional geography and was 'against systematic geography as the core of the discipline. Vidal's method, which and 'local' in the sense of being somewhat isolated from the world around them and dominated by an agricultural way of life. These circumstances favoured development of local solution in architecture, agricultural practices and a general way of life: the communities lived in such close association with nature that they might be self-sufficient in majority of goods. Vidal advised geographers to carry out research in folk museums and collections and to investigate agricultural equipment which had been used in the past in order to study the individuality of development of a region. Vidal's work, despite the breakdown of the self sufficient regional economy, has been and still is a great inspiration to a vital tradition in geography, that of the regional monograph. Owing to these factors, Vidal argued for regional geography as the core of the discipline of geography. To quote Lablache:

Human Societies like those of plants and animal world are composed of different elements subject to the influence of an environment. Some societies have long been part of the environment, but others are in process of formation, continuing to recruit numbers and to be modified day by day.

As is clear from the above, Vidal advocated the principle of terrestrial whole'. He believed that the earth and its inhabitants stand in the closer reciprocal relations, and one cannot by truly presented in all its relationships without the other.

Another French geographer Redus, while giving a precise picture of world societies, asserted that man is not the product of this environment but an important component of it. "Man may modify his dwelling places to suit his own purpose, he may overcome". The later part of the 19th century and the middle of the 20th specific knowledge with very little or no concern for "integrative overviews" revealing the generic relationship of universal relevance. Undoubtedly, this phase enriched the subject but it also revealed the inherent weakness of the geographical methodology for the specific and the particular, and its failure to rise above mere description of the individual aspect to a level at which cognition of the general features becomes possible. Admittedly, it did not always succeed in relieving itself from the grooves of specialized knowledge in its search for laws and generic concepts.

The Post-second world war period is characterized by quantitative revolution in the subject. It has developed new conceptual frameworks leading to the emergence of a location theory which seeks for new order in the distribution of phenomena in space in their interlinkages.

The foregoing description gives a historical background of the dichotomies of systematic or general versus special or regional geography. The approaches adopted by the scholars of systematic and regional geography are described hereunder.

At stated at the outset, systematic geography deals with the universal laws and generic and make use of generic concepts, whereas is essentially analytical and deals with unique situations and their peculiarities. For, example, if we take the patterns of distribution of temperature, rainfall, vegetation, minerals, crops and population, and examine them at the world level or continentwise, it would be a case of systematic geography. To illustrate this points, Figure 9.1 has been plotted. In this figure, the rows show the approach of study of systematic geography, and columns show the approach of study of regional geography, i.e., if we study the types of soils in various continents it is an example of systematic geography, while if we take a particular continent or a region of it and superimpose all the physical and socio-economic variables, it would highlight the peculiarities of that regional. This synthetic picture, revealing the special features of the regional is a case of regional geography.

Figure 9.1 further reveals various branches of the subject. As these branches of general geography are also combined into regional geography, it can be seen that these are the two main aspects of the subject. The figure clearly shows how the combinations of phenomena and parts of the earth's surface can give regional or general geography.

CONTEMPORARY GEOGRAPHY SPECIAL GEOGRAPHY

	1	2	3	4	5	6	7
General Geography	North America	South America	Europe	Africa	Asia	Australia	Antarctica
Landforms							
Climate							
Soils							
Plants							
Animals							
Economic							
Social							
A Urban							
B Settlement							
C Population							
D							
Political							

NOTES. D = Many new branches growing here

[shaded box] = special (regional) geography of Africa

[shaded box] = General geography of population which considers its geo-regional variation throughout world

The dichotomy of systematic versus regional geography seems to be quite logical. In the opinion of some scholars, there may exist several geographies rather than one. In fact, geography has been defined by different geographers differently. These definations range from landscapes, Places, space, location, man-nature interaction, man-earth system, human ecology and areal differentiation of interrelated Phenomena on the earth surface to man. Geography is multivariate not only in its combination of natural sciences,

At a time when regional descriptional is in backwater, it may be necessary to conceive general geography, compage regional geography, and full descriptive regional geography as three quite separate branches. Compage geography will not include phenomena which are simply characteristics of a place unless they show some logical arrangement in space and connections with other important phenomenon. The term compage was introduced to geography by B Derwent Whittlesey (1956) in an attempt to give greater precision to several aspects of regional geography. The central idea of compage is that all the features of the physical, biotic and societal environments are functionally associated with the human occupancy of the earth.

More stress on regional geography is also not correct because no two places no two groups of people are exactly alike in any place at any point of time. In the words of Barry, " the regional and general geography are not different approaches, but are just the two extremes of a continuum", which he likens to a three dimensional matrix — the earth, social and geometrical. All material objects and phenomena which exist is the real world and have been observed by us have two entities — individual or the particular and the general or the universal. They have particular characteristics which are peculiar to them and make them unique; they also some general features which are common to other objects of the same type and are, therefore, universal in nature.

It is, therefore, important note that the general characteristics exist in, and are seen through, the particular and the individual characteristics and are not independent of them. The general becomes true in the particular and the particular becomes true in the general.

To quote V.A. Anuchin, the soviet scholar :

One can trace definite cycles in the history of world science-periods when general absorbs the particular and succeeded by those during which the particular destroys the general and a single science disintegrates into an endless number of branches. This latter differentiation leads to great extensions of knowledge but results in less of integrative overviews of science which show that the whole is broader than the sum of the parts. Contemporary geography is a victim of such a phase of differentiation.

Thus, the dichotomy of systematic and aregional therefore falls, as they do not oppose but support each other in the final analysis, of the subject matter of geography.

Physical Geography versus Human Geography :-

As regards dichotomy of physical geography versus human Geography, the Greeks were probably the first who started this branching of the discipline. Hecataeus gave more weight to physical geography, while Herodotus and Strabo emphasized the human aspect. Dualism of physical versus human geography is still a characteristic of the discipline. Some writers have regarded it as essential for the Justification of the role of geography. In studies of natural phenomena, including climatology, meteorology, hydrology, oceanology, geology and landforms, it is possible to use the methods of natural science and to draw conclusions with a large measure of scientific precision. Our generalization about human groups must be limited in time and space, and must relate to statements of probability rather than certainty.

Verenius, whose Geographica Generalis was published in Amsterdam in 1650, was one of the first scholars to suggest these essential differences in characteristics of physical and human geography. Humboldt who is considered as the last of the great polymaths, was primarily interested in physical geography. Under these circumstances, Mare somerville published physical geography in 1848. The term 'geomorphology' was coined by Albrecht Penck - the German geographer - who was a geologist by training. In all these studies, man was ignored. It was during the period that Davis put forward the idea of the normal cycle of erosion. Ratzel and semple also gave greater importance to physical environment which determines the lifestyle of people. Semple asserted that " man is the product of earth surface".

Hungtingdon, while writing about the march of civilizations, has opined that the shift in their centres was due to the climate and weather conditions. Thomas Henary Huxley wrote Physiography in 1877.

The soviet scientists also conceived geography as the branch of science which deals with geomorphology, pedology, hydrology and meteorology. The Protagoinsts of physical geography declared it as the only area in which geographers should contribute. In the opinion of wooldridge and East.

It is futile to assert that 'human' or 'social' geography can be seen in terms of formal categories and universal principles and processes as can physical geography. This impedes to it no inferiority.

Wrigley has recently commented on the methodological dificulty of "running in harness, as it were, physical geography and social geography". In Physical geography law statements are of importance, but in human geography such statements are irrelevant. It may thus be claimed that laws can be established in both human and physical geography.

The real dichotomy of Physical versus human geography cannot be understood unless some light is thrown on the historical development of human geography. Rittzel were among the first who considered man as an agent who brings change in the landscape. He also argued that the same physical factors do not always produce the same effects. In geography, according to Febvre, "we deal with men's work, men's calculations, men's movements, the perpetual ebb and flow of humanity, man not the soil or the climate— is ever in the forefront". He realized the futilty of setting man's natural surrounding in opposition to his social milieu and of regarding one dominating the other. Jean Brunkes prepared himself for the conceptual framework of human geography. Latter, Albert Demangeon was a strong follower of vidalian tradition.

In America, Mark Jefferson brought the idea of 'central places', 'the Primate city' and 'the civilizing rails' in the field of human and urban geography. In the soviet union, D.N। Anuchin followed the principle of "economic determinism".

Historical Geography versus Contemporary Geography

The dichotomy of historical geography versus contemporary geography has also attracted the attention of historians, geographers and other social scientists. Historical geography deals with the geography of an area, region or world as it had been in the past. For example, if we could ascertain the cropping patterns and settlement distributions in India during the medieval period, it would be an aspect of historical geography. S.M. Ali attempted to construct the geography of ancient India in his monumental work— The Geography of Puranas. East has constructed human geography of Europe at several stages, while other historical geographers have dealt with topics, rather areas in the past. The number of books on historical geography is not as great as the number of books on contemporary geography but as historical geography embraces both general and regional works, and involve all the branches listed, it is not a part of geography, in the sense social geography is a part. Contemporary geography will become historical geography with the passage of time. Contemporary geography and historical geography are mutually exclusive and must logically exist as supporting each other.

There are other points of views also regarding the nature and scope of historical geography. These may be listed briefly as under.

(i) The operation of geographical factor in history.

(ii) The evolution of cultural landscape.

(iii) The reconstruction of past geographies.

(iv) The study of geographical changes through time.

The Historical Factor in Geography:-

In the second half of the 19th century, historical geography was conceived as a branch of geography which should be concerned with the inter-relationship of phenomena in space in a particular period or with the geography of the past period, and the influence of geographical factors on history. To some other it also means the control/effect/influence of the physical environment on man's activity in the past or on history and historical events. This leads to determinism and possibilism and it suggests a view of causation by which it was thought that phenomena could best be understood by studying, listing and classifying the operation its own particular groups of factors and their effects, each group producing its pattern of determinism; social, economic, technological determinisms thus take their place side by side with geographical determinisms. This type of historical geography has, however, been criticized for setting out to clarify history, not geography. Thus, it may be nothing more impressive than "adding the missing environmental notational to the work of historians".

The changing Cultural Landscape :-

According to this point of view, historical geography should be the study of the changing cultural landscape. It was this approach which led to the reconstruction of the past cultural landscape in many of the European countries. One of the most appealing virtues of the approach to historical geography through the changing cultural landscape is its apparent symmetry with genetic geography. Both are seen to be concerned with the evolution of landscape features and thus help in laying the foundation of geography. It is more profitable to regard the landscape elements as a source of invaluable evidence for the reconstruction of past geographies rather than as the phenomena which are to be explained by historical study. The distribution of settlements, house types, field patterns can help in ascertaining the cultural landscape of the past.

The Reconstruction of Past Geographies:-

The most orthodox view of historical geography is that it should be concerned with the reconstruction geographies of past time. There can be numarous typs of historical geographics, e.g., agricultural geography, urban geography, industrial geography, social geography and regional geography. The geographies of the Past in fact are of vital importance to the present geographers. The reconstruction of the geography of the past periods is necessary to establish a relationship between the past and the present distribution of Phenomena. The reconstruction of past geography of a regional or country is, however, a difficult task.

Geographical change Through Time :-

Geographers are essentially concerned with Places and what they are like, whether in the past or the present. The geographical fuctors, both physical and cultural, change in space and time. Consequently, the character of a regional also changes. The study of those geographical changes through time should be the main concern of a geographer. As stated above, historical geography and contemporary geography are one and the same. The present geography will become historical geography in due course of time. Thus, Mackinder wrote that historical geography is the study of historical Present: "The geographer has to try and to put himself back into the present that existed, let us say one thousand or two thousand years ago; he has got to try and restore it."

Study of functional (or nodal) Regions versus Geography of formal (or uniform) Regions

The concept of space is very important in geography as it deals with locations and sites. The dichotomy of functional location and formal Site means the division of geography into the studies of geography of real places on the earth surface and the geometric space on paper. The idea of formal sites and functional locations emerged to avoid the controversy of regional versus systematic and physical versus human geography.

The functional location or functional region (or nodal) is a new concept in geography. In a given location, there is a variety of relief, soil, land use, industry, transport linkage and marketing centres. These phenomena are united not by being piled up on top of one another in the same space, but by fuctioning and working together as part of an economic and social system. The homogeneous areas or habitats inhabited by societies, social groups, or nations are known as formal regions. Two or more different societies combine to form a community in a functional area, which by name and definition must be similar to formal regions. These communities, like functional regions, are organized and represented by small systems or Part systems. In Contrast to functional locations, the formal site Study concerns with the phenomena which exist in a region or place and their interdependence on each other. The basic Philosophy of the study of formal locations in that the Uniform relief Combined with uniform climate, and Uniform Soil result into Uniform land use, Settlements and mode of life within a region. This traditional approach of formal Sites looks outdated in the present context and cannot be of much help in explaining the complex relationship of man with environment.

One important aspect is that geographical features like settlement patterns, land use, diffusion processes, etc, show a location and dynamics which to a large extent are due to their relative positions in space. Pip Forer observes that since distances in time, cost or even network mileage are partly a reflex of socio-economic demands and technological progress the types of spaces are naturally dynamic and truly relative.

In the words of P. E James, acceptance of many dichotomies is a Semantic trap. The dualism of tropical versus regional, physical versus human, determinism versus possibilism, deductive versus inductive, idiographic versus nomothetic, formal sites versus functional locations are not mutually contradictory, such as good and evil or reason and faith. A dichotomy does not exit when one of the alleged opposites forms a subordinate part of the other or when one is derived from the other, a dichotomy many exit for some people and not for other on certain basic attitudes of the culture. All the dichotomies discussed have done particular damage to geographical thinking.

Notes:

1. Minshull, R, 1970, **The changing** Nature of Geography, London, P. 138.

2. Ahmad, A., 1978, Dualism and Dichotomies in Geography, A Discussion Paper, P.6; and 1983, Nature of Dichotomy in Geography: General and Particular', The Indian Geographical Journal, Vol. 58, NO. 2 pp. 97-107

3. Haggett, P., 1965, Locational Analysis in Geography, Arnold, p. 35.

4. James, P.E, and Martin, G.J., 1981 All possible worlds, p. 124.

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COURSE NAME :- PRAKALPA PATRA

RACHANA O UPASTHAPANA

COURSE CODE :- BAPBNGSE602

CONTACT NO :- 6294853153

৩। দ্বিতীয় বর্ষে বিদ্যাসাগর: সাহিত্য ও সমাজ তাঁর অবদান,

ঈশ্বরচন্দ্র বিদ্যাসাগর উনবিংশ শতকের একজন বিশিষ্ট বাঙালি শিক্ষাবিদ, সমাজ সংস্কারক ও সাহিত্যিক, অনুবাদ ভাষা ও সাহিত্য অবদান। সাহিত্যের জন্য অনুবাদ কলেজ থেকে ১৮৪১ সালে তিনি বিদ্যাসাগর উপাধি লাভ করেন, অনুবাদ সুভাষী বাংলা ও ইংরেজী ভাষায় বিশেষ দক্ষতা নিলেন তাঁর, তিনিই প্রথম বাংলা লিপির সংস্কার করে তাকে যুক্তিযুক্ত ও সহজপাঠ্য করে তোলেন, বাংলা গদ্যের প্রথম নির্মিতি বলে অভিহিত করেছেন রবীন্দ্রনাথ ঠাকুর, তিনি রচনা করেছেন যুগান্তকারী বিশুদ্ধপাঠ্য 'বর্ণপরিচয়' সহ একাধিক পাঠ্যপুস্তক, অনুবাদ ব্যাকরণ গ্রন্থ, অনুবাদ, হিন্দি ও ইংরেজী থেকে বাংলায় অনুবাদ সাহিত্য ও প্রাসঙ্গিক সংক্রান্ত বহু রচনা, নারী মুক্তির আন্দোলন ও তাঁর অবদান উল্লেখযোগ্য।

বাংলা সাহিত্যের ইতিহাসে ঈশ্বরচন্দ্র বিদ্যাসাগরের অবদান ব্যাপক, তিনিই প্রথম বাংলাতে আধুনিক উপন্যাস ধারা তোলেন, তার পরে বাংলা ভাষার ব্যবহার মধ্যযুগীয় ধারা থেকে মুক্ত বাংলাকে অত্যধিক সমৃদ্ধ এর কাছে নিয়ম-অনুযায়ী তার অধ্যায়ন ধারা, তিনি ধারাগুলো সমাজ সংস্কারক ও সমাজবিরোধী তার নিজস্ব ধরণের লেখার ভেতর সমকাল-বিদ্যা বিষয় তুলে ধরেন, ঈশ্বরচন্দ্র বিদ্যাসাগরের বিপুল পাণ্ডিত্য ও তেজস্বিতা ব্যক্তিত্বের অধিকারী ছিলেন, তার ব্যক্তিত্ব, ব্যক্তিত্ব ও বিপুল কর্মোদ্যমের ভেতর ও সাহিত্যসংস্কার ছিল তার সমকালবোধ, জীবনবৃত্তি সাহিত্য ও সমাজ সাধনাকে তিনি নিয়োজিত করেছিলেন সমগ্রের কল্যাণে।

মধ্যযুগীয় রীতি থেকে সরিয়ে তিনি উপন্যাসকে সমৃদ্ধ করেন, উপন্যাসের ভেতর সুষ্ঠু রসবোধ তোলেন, পাঠ্যপুস্তকের অভাব দূর করার জন্য তিনি লেখেন - বর্ণ পরিচয়, বোধোদয় (১৮৬৩), কথামালা (১৮৬৩) আখ্যানমঞ্জরী, বেতাল - পঞ্চবিংশতি (১৮৪৭) প্রভৃতি, সদ্য সুলভ বিদ্যাস ও সাহিত্যের মান করে তুলবার জন্য লেখেন শকুন্তলা (১৮৫৪), সীতার বনবাস (১৮৬০) সমসাময়িক, দুর্গাবিনাশ (১৮৬৩) প্রভৃতি, উনিশ শতকে ঈশ্বরচন্দ্র বিদ্যাসাগরের অবদান সমগ্রে

তিনি অন্যের ভুল দেখলে, ব্যক্তিত্বের জায়গায় মুক্তি সংগ্রামে তিনি তাদের ছেড়ে দেননি, বরং অন্যের উপর রাগ দেখাতেন, এজন্য তাকে সমাজের প্রতিষ্ঠিত লোকদের কাছ থেকে অনেক নিন্দা সহ্য করতে হয়েছে, তবু তিনি থেমে থাকেননি, তিনি সত্যকে প্রতিষ্ঠিত করেছেন।

ঈশ্বরচন্দ্র বিদ্যাসাগরের সঙ্গে জনগণ ব্যবহার ছিল অত্যন্ত সুনিবিড় ও সুমধুর, জনসাধারণকে বক্তব্য সুন্দর ভাবে সহজ ভাষায় ব্যবহার প্রকাশ করতেন, ঈশ্বরচন্দ্র বিদ্যাসাগর যে কাজটি সুন্দর ভাবে করেছিলেন, রবীন্দ্রনাথ ঠাকুর বলেছেন, "বিদ্যাসাগর বাংলা ভাষার প্রথম যথার্থ শিল্পী, তিনিই সর্বপ্রথম বাংলা গদ্য কাঠামোতুল্যের তৈরি করেন, তাহার যে কোনো লেখা এনেই তাকে সহজ নয়, তাহার সাধু যেন তেল প্রকাশের কৌশলের বক্তব্য নিজস্ব প্রতিভা দিয়েই যে নতুন সমাধান হয়নি, বিদ্যাসাগর বাংলা ভাষা তাহার প্রসন্ন করেছিলেন,"

রবীন্দ্রনাথ ঠাকুর ঈশ্বরচন্দ্র বিদ্যাসাগরের সমাজিক সুপথের প্রশংসা করেছেন, সমাজিক সত্যকে প্রতিষ্ঠিত করবার জন্যই তিনি বাংলা ভাষায় সংস্কার করেন, তার রচনায় যেটা সমাজিক প্রেম তুমুল হয়ে তাহা সর্ব, কোনো বন্ধন বা খেলা বড় হতে পারে না, বড় হওয়ার জন্যই নিজ ব্যক্তিত্ব-নিজ কর্ম, এ সত্যকে তিনি প্রতিষ্ঠিত করেছেন, এজন্য তাকে বহু সংগ্রাম করতে হয়েছে, বহু নিন্দা সহ্য করতে হয়েছে, তবু তিনি জানি হয়েছেন ক্রমাগত, তারপরও তাদের প্রতি উর্বল করা হয়, তাহার অন্যায় মানুষের প্রতি তাহার অনুভব করার জন্য ব্যক্তিত্ব-বিষয় সম্পূর্ণ ও নিঃস্বার্থ উদ্দেশ্য সম্পন্ন হইলে এবং বিদ্যাসাগরের ধীরে মানুষের জাতীয় জীবনে চিরদিনের জন্য প্রতিষ্ঠিত হইয়া থাকবে,

(৬) শরৎচন্দ্রের কথাসাহিত্যে নারীচরিত্রের বিশিষ্টতা।

বাংলা সাহিত্যের এক অনন্য নাম শরৎচন্দ্র চট্টোপাধ্যায়, তাকে বলা হয় বাংলা সাহিত্যের সবচেয়ে জনপ্রিয় কথাসাহিত্যিক, বাংলা সাহিত্য ও সংস্কৃতি জগতে শরৎ সাহিত্যের প্রভাব অত্যন্ত গভীর ও ব্যাপক, কখনো কখনো তিনি তীক্ষ্ণ দৃষ্টি ঘুরালেন দিখাতেন, শরৎচন্দ্রের নায়িকা শ্যাত তার উপন্যাসের প্রধান চরিত্রকে বলা হয়, এরা চরিত্র অনেক চরিত্রের ভিড়ও নিজস্ব স্বকীয়তা এবং তীব্র স্বাতন্ত্র্যের কারণে স্বতন্ত্র।

তার সময় নতুন প্রজার বিতর্কমারী শরৎচন্দ্র নারী অধিকার তার সমর্থন রহস্য সমাজ ব্যবস্থার মূল প্রমুক্তির ধারনকে তীব্র বিরোধী কয়েৎ, শরৎচন্দ্র বীচিত্র বহুর এলাকা মেয়েদের কথা। লেখে আবিস্কৃতিয়া মেরা নারী চরিত্র এ সর্বদা কয়াদেশ, তা অত্যন্ত জনপ্রিয় তেরব নারীরা কেটে কেটে সাধারণ মেয়ে, কেটে বা মধ্যবিত্ত বা নিম্নমধ্যবিত্ত ঘরের সন্ধান, তাদের দেখা সমাজার চারিতে করেন,

শরৎচন্দ্র নিবিরত নিদর্শ তেদেন প্রসকল মেয়েদের গল্প, শুধু নারীর নয়, সাধা সমুহের অন্তের নিবুত রহস্য এর দিশোদিশন শরৎচন্দ্র, নারী চরিত্র রুপায়নে তার আখ্যানমুখে সতেজ সরল উন্নয় এবং তাৎবারে ক্রমনির্ভিক তদয়দর্শ তীব্র রেখে, শরৎচন্দ্রের মনে হয়ে নিদল নারীসুলভ বলা তার প্রমাণ মূল্য নিধর্ঘন তাদা সমুব নয়, তার মতে, আদিন নারী হয়ে সাব দুদাঃ এদিলে সমজ অনুবাধ বয়তে ব্যরতে নারীর ধমায়ন মূল্য।

শরৎচন্দ্র চট্টোপাধ্যায়ের উপন্যাসের নারী চরিত্র সুপের তাদের ও উজ্জ্বল তাদেরকরুন উজ্জ্বল্যে উজ্জ্বল হয়েছে, 'বড়দিদি' (১৯১৪) উপন্যাসের মাধবী এবং মৃণ্ময়ী দুর প্রকাশিত 'শেষের পরিচয়' (১৯৩৯) -এর সরিতা তাদের বাঙালীর মনে তীব্র দেয়, প্রায় ২০টি প্রধান উপন্যাসের একাধিক নারী চরিত্রে শেষ রেখে তাদে শরৎচন্দ্রীদের অন্তরিত্ব।

তিনি সদত সমুসের সমস্ত ভুবকেই করে দেখেদেন, এ জন্য নারীর জীবনের দুঃভাবিকা সুখ - দুঃখকে অপরিসীম সহানুভূতি ও দরদ দিয়ে তুলেদেন।

সমাজের মেরুদণ্ড যেসব নারী চরিত্রহীন, তাদের মধ্যে তিনি খুঁজে পেয়েছেন মনুষ্যত্ব। সমাজের ন্যায়-অন্যায়ের সম্মুখে হয়েও স্থান হলে তাকে নিরসনের জন্য সমাজ বহির্ভূত সত্য করে। শরৎচন্দ্রের দৃষ্টিতে নিঃস্ব অন্যায়। শরৎচন্দ্রের মতে 'দুঃখকে ঘৃণা কর, পৃথিবীকে নয়।' সমাজের অবহেলা-উপেক্ষিত নারীর প্রতি অজস্র দরদের সাথে মানবিক শোষণ- অবিচারের বিরুদ্ধে শরৎচন্দ্র দিয়েছেন বারবারই অন্যায়ের শব্দ, সরবে, একটি পথে অন্তঃসলিলা নদীতে শরৎচন্দ্র তার সমগ্র উপন্যাসে সামাজিক ও রাজনৈতিক সমস্যার চিত্র তুলে ধরেছেন।

তার উপন্যাসে প্রচলিত নীতি, ধর্ম তেমন ও সামাজিক অনুশাসনের বিরুদ্ধে একটা বিদ্রোহের জের দৃশ্য করা যায়, শরৎচন্দ্রের উপন্যাসে শূন্য নিম্নবিত্ত এক দরিদ্র নারীর জীবনচিত্র রূপায়িত হয়েছে। নীতি ও নির্বাণের যে সৌন্দর্য, তা সামাজিক অন্যায় সংশয় ও জাতিভেদকে স্পর্শ করেছে, শরৎচন্দ্র যেখানে দেখেছেন সমাজের শোষণ- বঞ্চনা তথা এই ন্যায় ও সংশয়, সেখানেই তিনি বিদ্রোহী হয়ে উঠেছেন।

'শেষ প্রশ্ন' উপন্যাসের কমল চরিত্রে চারিত্রিক দ্বন্দ্বের যে সমাজদর্শনের দ্বন্দ্ব প্রথম, তথায় অনুশাসনিক গ্রহে একাধিক পুরুষকে সে বারবার স্পর্শ করেছে জীবনসঙ্গী হিসেবে অনুসন্ধানিক বিশ্বের প্রয়োজনে অসংযত প্রশ্ন করতে দিয়ে সমাজ কিংবদন্তিকে উদ্দেশ্য করে নিতান্ত ধর্ম বলেছে, 'তুমি করেছ অন্যায় অন্যায়। তবে আমি সব তবে নয় দ্বার উঠে দিয়ে খুলিয়া কাটিয়া নিত? সত্য সবকিছু তথ্য যে অনুসন্ধানে স্থানে তারই দাড়ি দিয়ে উঁকে রুখব তবে? তাহলে আমি করব এই কাজ?' নিতান্তই নারীর নৈতিক সংশয় সর্বপ্রথম বঙ্কিমচন্দ্রের 'চন্দ্রশেখর' উপন্যাসে শৈবালিনী চরিত্র চিত্রণে চিত্রিত হয়।

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ক) ঊনবিংশতবর্ষে বিদ্যাসাগর ঃ সাহিত্য ও সমাজে তাঁর অবদান।

⇒ ভূমিকা ঃ ঊনবিংশ শতাব্দীর প্রাণপুরুষ, বীরসিংহের সিংহ শিশু বিদ্যাসাগর ছিলেন বাংলা গদ্যের জনক ও বাঙালী জীবনের স্মারক। সনাতন পরিবারে তৎকালীন ব্যবস্থার মধ্যে জীবন কাটিয়েও বিদ্যাসাগর বাঙালী উন্নতিকে ঝিমিয়েছেন তাঁর বিশ্বাস ধর্ম ও নিষ্ঠার জেরে এত বড় ব্যক্তিত্বশালী পুরুষ হওয়া আছে।

তৎকালীন সমাজ ও ঐতিহাসিক মূল্যাবলী ঃ হিন্দুর একে সে সময়ে তৎসম্পূর্ণ বাঙ্গালীদের সে রূপ ছিল – Abuse of reason and injustice of man – এর। কুসংস্কারের আলোয়তনে বাঙালি সমাজ যখন বিধবা গান্ধীস্ম নিয়মের কোমরে বীভৎস বিশ্ব তমবসিত তৎপরতি যখন সমাজের কুসংস্কারের কর্তা তখন বিদ্যাসাগর এবং মেধাস্ম সেই আলোয়তনের প্রাচীরকে যুক্তির দ্বারা ভেঙে দিলো মানবধর্মের তত্ত্ব যোমনা করলেন।

জীবনী ঃ পশ্চিমে মেদিনীপুর জেলার বীরসিংহ গ্রামে এক সুরিত ব্রাহ্মণ পরিবারে ঈশ্বরচন্দ্রের জন্ম। মাতা ভগবতী দেবী ও পিতা ঠাকুরদাস বন্দ্যোপাধ্যায়ের সুযোগ্য সন্তান ছিলেন বিদ্যাসাগর গ্রামের পাঠশালায় তাঁর প্রথম শিক্ষা শুরু। তারপর পিতার সঙ্গে পায়ে হেঁটে তাদের কলকাতায় এবং তাঁর পথে মাইলপোস্টের পুনে পুনে গনিতের পাট প্রসূত করেন। কলকাতায় সংস্কৃত কলেজে তিনি ভর্তি হন। অচন্ড দারিদ্র্যের মধ্যে থেকে নিজের হাতে রান্নাবান্না করে। রাস্তার গ্যাসের আলোতে ঝাড়িয়ে লেখাের পড়া করে অতি কমেই তিনি বিদ্যালাভ করেন।

তাসর্বারের কর্মি ও কর্মের পরিসমা- ঈশ্বর কুমের অবস্থলে তিনি অতি ক্লাসে প্রথম হতেন ও তজ্জন্য- প্রতিলাভ করতেন। ১৮৪১ খ্রিস্টাব্দের ২৭ ডিসেম্বর মার্চ উর্ত্তীর্ণ হয়ে প্রধান পন্ডিতরূপে যোগদান করেন। ১৮৫১ খ্রিস্টাব্দের ২৭ জানুয়ারি তিনি সংস্কৃত কলেজের অধ্যক্ষ নিযুক্ত হন। ঈশ্বরচন্দ্র বাঙালি জাতিকে অজ্ঞানতার তমসা থেকে জ্যোতির্ময় আলোকে এনেছিলেন।

শিক্ষা সংস্কার : ঈশ্বরচন্দ্র বাঙালি জাতিকে অজ্ঞানতার তমসা থেকে জ্যোতির্ময় আলোকে এনেছিলেন। জাতিকে তিনি সুশিক্ষা ও বিচারবোধে উদ্দীপ্ত করতে চেয়েছিলেন। সেজন্য প্রয়োজন ছিল উপযুক্ত শিক্ষার। সংস্কৃত কলেজের পূর্ণ পঠনে তিনি তার শিক্ষানীতিকে দৃঢ় করতে চেয়েছিলেন। কৃষিজীবী- মানুষের জন্য তিনি তার বাসাঘরে লাইব্রেরি খুলেছিলেন। মেট্রোপলিটন ইনস্টিটিউশনকে তিনি বেসরকারি কলেজে পরিনত করেন। ব্যাক্তিগত পরিকল্পনা মতো ১০১ টি বঙ্গা বিদ্যালয় স্থাপনা করেন।

সাহিত্যকীর্তি : বাংলা গদ্যের সমর্থ শিল্পী-বিদ্যের দ্বিতীয় এ ক্ষেত্রে বিদ্যের উপশ্রেণীবাদী, তার সাহিত্য ৬ঢাকে পাঁচ ভাগে ভাগকরা যায় - (i) অনুবাদমূলক -'সীতার বনবাস', শকুন্তলা, ভ্রান্তিবিলাস ইত্যাদি। (ii) শিক্ষামূলক - বর্ণপরিচয়, কথামালা ইত্যাদি। (iii) সমাজসংস্কারমূলক- বিধবা-বিবাহ প্রচলিত হওয়া উচিত বিনা অতিরিক্ত প্রস্তাব, বহুবিবাহ রহিত হওয়া উচিত কিনা এতদ্বিষয়ক প্রস্তাব, ইত্যাদি। (৪) লঘু রচনা - অতি অল্প হইল, আবার অতি অল্প হইল ইত্যাদি। (৫) শ্রেণিক রচনা - প্র...। সংকলন, বেশু রামকৃষ্ণ বঙ্গোপাধ্যায়ের একমাত্র কন্যার খ্যাতে রচিত।

সমাজ সংস্কারক : মাতা ভগবতীর প্রতি শ্রদ্ধা-ই তাকে নারী জাতি আন্দোলনে নিগৃহীত করেছিল। রামমোহন সতীদাহ প্রথার

বিরুদ্ধে আন্দোলন করে নারীজাতির প্রতি সে শ্রদ্ধা দেখিয়েছিলেন— বিধবা বিবাহকে শাস্ত্রসম্মত। তাঁর মতে তৎকালবস্থার বিধবারা শাস্ত্র মতে মুক্তি পাবী শরূপ্না কম তবে সমাজের শারপাশের লোকেরা বিকোতা দেবতা বৃত্তিতের সম্মেলন রামকোমল প্রতীহংক অন্য কম করেছিলেন, বিদ্যাসাগর ১৮৫৬ খ্রিস্টাব্দের ২৬ শে জুলাই 'বিধবা বিবাহ আইন' পাশ করিয়ে নেন। এখানেই তিনি থেমে থাকেননি। নিজের ধরতে তিনি এক একটি করে বিধবাদের বিবাহ দিয়েছিলেন। এবং অন্যয় তাঁর ব্যাক্তিগত জিবন এত অমস্থ বিবানি শ্রতের তাকার পৌরে নিতেছিল। শুধু কি তাঁর স্বদেশের বন্ধু বিবাহ রক্ষ করতেও তিনি অন্তেন্ট ছিলেন।

জনতীনুতাবান়: বর্তমান মেরুদণ্ডহীন বাভোদীন জাতির কথাই বিদ্যাসাগর বিলেন আত্মমর্যাদাসম্পন্ন খোক্সাতুমিল জাতীর ও রামকোর কল্যাণে তিনি নিজেকে নিয়োজিত করেছিলেন। শিপান়ী— বিদ্রোহে দমন করার জন্য— ইংরেজরা সংকুদ্ধত করেতে অপন়ী—আস্তানা স্থাপন করতে চাইলে বিদ্যাসাগর তার প্রতিবাদ করেন। জনতীন্ত কংগ্রেসকে তিনি সুখাস্ত আন্দোলনে রূপান্তিত হওয়ার স্বপ্ন দোখতেন। আ ও দেশের জাতির প্রতি তাঁর জান ছিল অতুলত।

মানবিকতা বোধ: তিনি শুধু বিদ্যার সাগরই ছিলেন না তিনি বিলেন দয়ার আলের করুনার সাগর শ্রীরামকৃষও তাঁকে দয়ার সাগরই বলতেন। পরদুঃখকাতরতা তাঁকে দীন— দুঃখীর দোষের তুল্য। শোষাতে অন্তেট করোতিলা। আমের বনসাতেই তিনি গ্রামের মানুষের জন্য— অন্ন স্থলোছিলেন। শীতার্ত আনুষ কে গরম বস্ত্র দান করতেন। বন্ধু দম্ভয্য চিকিৎসাকস্যও তিনি প্রতিশ্রুতি করেছিলেন। প্রবাসী— কবি মধ্সূদনকে প্রেম আর্থিক অনটনের হাত থেকে রক্ষা করেছিলেন তিনি। দোন়ার ও লোকনারের উর্ধ্ব মানবিকতাকে তিনি শ্রদ্ধ্য দিয়েছিলেন বেশি। এ পৃথিবীকে তিনি অবিরান তৎবেদনিত মানুষের বসবাসের সত্থার স্বপ্ন দেখী— করেছিলেন।

উপসংহার ঃ একালের বিদ্যাসাগরের চারিত্রিক গুনাবলী আমাদের অবসান তাৎপর্যময়তা। চৈতন্য- সুলেন্দ্রপ্রসু চট্টোপাধ্যায় লিখেছিলেন।

— '' আজকের বাঙালীর পক্ষে সবচেয়ে বড়ো করনার গুলো অতি বিপক্ষমানা- বাঙালী- ঈশ্বরচন্দ্রকে আমাদের প্রতিদিনকার জীবনের যথা অ্যান্ত করে তোলা,'' বিদ্যাসাগরকে উপলব্ধি করতে চান তাকে অবশ্য শূন্যাসন করতে পেলো অবচেতন তার ঋণস্বাতের মতো দারিদ্রত কাটাআতে অনুবীবন করা। কবি-কবি নিজের জীবনে উপলব্ধি করেছিলেন বিদ্যাসাগরের করা-মাতিন্য। তাই নিজনি রঙ্গে উল্লেখ করেন—

' বিদ্যার সাগর তুমি বিখ্যাত ভারতে
করুনার সিন্ধু তুমি, সেই তাদে মনে,
দীন জন, দীনের বন্ধু।'

৬) ভারতবর্ষে সত্যজিৎ রায় : বিশ্বদরবারে সাহিত্য ও চলচ্চিত্রে তাঁর অবদান।

→ ভারতবর্ষে সত্যজিৎ রায় : (২ মে ১৯২১ - ২৩ এপ্রিল ১৯৯২) একজন ভারতীয় চলচ্চিত্র নির্মাতা, চিত্রনাট্যকার, সংগীত পরিচালক এবং লেখক। তাঁকে বিংশ শতাব্দীর অন্যতম শ্রেষ্ঠ চলচ্চিত্র নির্মাতাদের অন্যতম হিসেবে গণ্য করা হয়। সত্যজিতের জন্ম কলকাতা শহরে সাহিত্য ও শিল্প জগতে খ্যাতনামা রায় পরিবারে। তাঁর পূর্বপুরুষের নিবাস ছিল তৎকালীন ব্রিটিশ ভারতের কিশোরগঞ্জ (বর্তমানে বাংলাদেশ) কটিয়াদী উপজেলার মসুয়া গ্রামে। তিনি কলকাতার প্রেসিডেন্সি কলেজে ও শান্তিনিকেতনে রবীন্দ্রনাথ ঠাকুর প্রতিষ্ঠিত বিশ্বভারতী বিশ্ববিদ্যালয়ে পড়াশোনা করেন। সত্যজিতের কর্মজীবন অন্যতম বাণিজ্যিক চিত্রকর হিসেবে শুরু হলেও প্রথমে কলকাতায় ফরাসি চলচ্চিত্র নির্মাতা জাঁ রেনোয়ারের সাথে সাক্ষাৎ ও পরে লন্ডন ভ্রমণের সময়রত অবস্থায় ইতালীয় নব্য- বাস্তববাদবাদী চলচ্চিত্র Bicycle Thief ছবিটি দেখার পর তিনি চলচ্চিত্র নির্মাণে উৎসাহী হন।

<u>কর্মজীবন</u>: (১৯৫০ -৫৯) সত্যজিৎ নিশ্চিত করেন যে বাংলা সাহিত্যের ত্রিপার্শ্ব- "বিভূতিভূষণ" শব্দের স্যাবলারী-খ হতে তার প্রথম চলচ্চিত্রের প্রতিপাদ্য। ১৯২৮ সালে অঙ্কিত বিভূতি ভূষণ বন্দ্যোপাধ্যায়ের লেখা এই পথ- আত্মজীবনী মূলক উপন্যাসটিতে বাংলার এক গ্রামের ছেলে অপুর বেড়ে ওঠার কাহিনী বিবৃত হয়েছে।

পথের পাঁচালী- চলচ্চিত্রের সংগীত পরিচালনায় সত্যজিৎদের আসে ছবি শুরুর ১৯৫৫ তে এবং ছবি তোলেন। এই ছবি বানানোর জন্য সত্যজিৎ কিছু পূর্ব-অভিজ্ঞতাবিহীন

কৃতাদীতে প্রভিত থাকেন, যদিও তার ক্যামেরাম্যান সুব্রত মিত্র ও শিল্পনির্দেশক বংশী-চন্দ্রগুপ্ত ভবতরের পরবর্তীকালে নিজ নিজ ক্ষেত্রে খ্যাতিলাভ করেন। অন্যথা ছবির শেষ্টিভাগ অসীম ছবির ত্রিপছের তোলামিন। ১৯৫৫ সালের শেষ দিকে সত্যজিৎও তার ত্রিপছের জন্য সরকারি পাওনা যখন পান ততদিনে পাওনা হয়ত ভেঙ্গে মুবিতিতে অর্ধলগ্নি করবেন। কিন্তু সে ছবির আর্থিক সাফল্য আসেনি না। পরের শ্যাডালীন হয়েছে তার থেকে সেই অতথাভবিতভাবে আসে ফিল্ম তিন বছর ধরে অসম্পূর্ণ হয়। সেসময় অন্যত্র হয়েছে করা অসম্ভব হত যদি সত্যজিৎ বর্তমান ব্যবস্থাপক অনিলা চৌধুরী অসমোভবিদ্যালয়ে ধর্মের খোলার করতে পারতেন। শেষ কাজটি লক্ষ্মীবন্ত অসরকালে অন্তে ছবি নিয়ে ১৯৫৫ সালে ছবিই নির্মাণ করেন। ও সে বছরই এটি মুক্তি পায় মুক্তি পাওয়ার পরই মুবিতি শিল্পক অসমোলেবক সবার তরফে আসছা লাভ করে ও বহু পুরস্কার জিতে নেয়।

ভারতে ছবিটির অতীশয়া ছিল উচ্চাসংসারী। তার নির্মাস অথবা কিউট " If is absurd to Compare it with any Othue Indian cinema Pathue Panchali is Pure cinema. (এত তরাও সেই সাও ভারতীয় তলছবির সাথে তুলনা করা অবাস্তব ..... ধর্মের সাচালী-রঙা বিরচনা তলছবি)। সত্যরাজ্য লিলনীতি ত্যাভারসন তলভিপতি তাতও ছুতিবাদক এসতি অসমোলেবনা করেন।

সত্যজিতের পরবর্তী ছবি অপরাজিত- এর সাফল্য তাকে আন্তর্জানিত মহলে আরও প্রতিত করে তোলে। দুই মুবিতিতে তরুণ অপুর উচ্চাভিলাস ও তার আবেগের ভালোবাসার ছবিতার চিরন্তন অনুভতে ধর্মঙ্গী রূপে মুক্তিতে তোলা হয়। বহু সমালোচকে আবের মর্ত্য-মুলাচরে ও ধীরথিত অর্থের তানুকর

মুম্বাইতে সত্যজিতের তৃতীয় ছবিটির চেষ্টেও ওদরে খ্যান দেন। তারপরাজিত ভেনিসে গোল্ডেন লায়ন পুরস্কার ভগতে, অপুসংসী সেম বরার আগে সত্যজিত আরও সৃষ্টি জনিষ্ঠ নির্মান অব্যন্তু করেন। অমর্ত্তি বিশা পরমা পামর নামের একটি ক্যাস্যারসংক্রান্ত মুমি। আর পারেরটি বিজে তরমাসরী - অমর অবসানের ওপর নিস্মিত জাতসাম্বর সেটিকে আর অন্যতম গুরুত্বপূর্ণ কাজ হিসেবে গল্প বারা হয়।

__কৃতিত্ব__ : সত্যজিও রায় বাহুলার লেখাথিকে এক নতুন পমের সন্ধান দেন। তিনি মোট ৩৫ টি বেঙ্গি বিশ্ববাসীকে উপহার দিয়ে দেন, তার বিস্মৃত বস্তুকণটি বেঙ্গি হল। পমের সাঁতালী, ভারতভূততা, দেবী, আলার তেস্মা ইত্যাদি। বেঙ্গি সাত্যও বিভিন্ন শ্রেউকিনকারী, তপসন, তস্করিনিসি ইত্যাদি অসতর পরিমে দীদেমেত্রন, তার পমের সাঁতালী - বিগটি দেশা বিদেশে মোট ১৫ টি পুরস্কার পায়। তার মোট ২০ টি ছি দেশা বিদেশে এক বা একরা দিক পুরস্কার পায়। তার বস্মটি অমর রমা - বাহুলারী - আদৃতি অসেসসার অস্মুন বেত্ত কারস্মানা ইত্যাদি, জিট 'অতেস্ম' পত্রিকাটিই সম্মানন করেবেন।

__পুরস্কার ও সম্মান__: সত্যজিও রায় তার প্রীতিভার তন্য দেশবিদেশা থেকে বহু পুরস্কার পেয়েছেন। ওঁর পমের সাঁতালী - বিগটি দেশা বিদেশে ১২টি পুরস্কার পায়। এবং তার বহু দিক দেশা বিদেশা শতু এক বা অলখিত পুরস্কার পায়। তারপরাজিত ছবিটির তন্য ৭ টি অন্তর্জাতিক পুরস্কার কম্ম সম্রাতও আর ও অসস্ম্যা পুরস্কার পেয়েছেন। ১৪৬৭ সালে ম্যাগসেসে পুরস্কার পেয়েছেন। সম্রাতও তিনি পদ্মবিভূমন ইত্যাদি পুরস্কার জসত করেন। ওঁর অর্ষিত পুরস্কার এবং অন্তুত লসত করেন।

__উপসংহার__: ১৪৪২ সালে ৫২ এপ্রিল তিনি মৃত্যু বরেন। তিনি তের ত্যাস বস্কের ভারত তমা বিশ্ব তিনি তার কৃতিত্ব তমত মোবাবেন। তিনি বিশ্বের তেমসৃ বেঙ্গিদের বর্ষ - তিনি বাংলা বাহ্যানী তমাতার্সবাসীর জৌরব।

Women and nature: Beyond dualism in gender, body, and environment/ Contemporary Perspectives on Ecofeminism.

 -Boom by Mary Phillips and Nick Rumens.

ABSTRACT :

Ecofeminism has a chequered history in terms of its popularity and its perceived value in conceptualizing the relationship between gender and nature as well as feeding forms of activism that aim to confront the environmental challenges on the recent moment. Mary Phillips's and Nick Rumens's *"Contemporary Perspectives on Ecofeminism"* held the promise of an *"Updated"* versing of ecofeminism, freed from the essentialising tendencies for which it had been critiqued and which had so stained its reputation leading to it falling out of favour, in academic circle at last. I will explore how the affirmation of the feminine subjective in both narratives is in constant opposition to the oppressive nature of the dominant patriarchy, on all levels of the treatise. I will also discuss how the book epilogues influence our relation to the narrative and the establishment of the ecofeminine subjective. The women's position and the state of the environment are mirrored on several levels, and the women seem to draw strength from their natural surroundings. I hope to elaborate on this paradox.

Keywords: Ecofeminism, gender, nature, updated, environment, patriarchy, Contemporary Perspectives, Mary Phillips and Nick Rumens.

INTRODUCTION :

In precise Ecofeminism is the movement that associates the philosophy of feminism with ecology. The term coined by the French

writer Francoise d'Eaubonne in the year 1974. This philosophy intertwines the abuse and dominance of women with that of the environment. As the term ecofeminism itself indicates, it is a meeting place of two theoretical enterprises –Feminism and Ecocritical discourses. In the context of ecofeminism, it is necessary to first understand the pregnant notion of feminism as a theoretical enterprise. Feminism does not simply derive from the exploitation of women by men but, as the major ecofeminists posit, it includes how women are the firsthand victims of the degradation of nature because of their close association and dependency on it. Ecofeminists illustrate the female values, nurturing and assistance is present both in nature and in the women. Women and nature are always inseparable. Ecofeminists do not pursue equality with men, but they need liberation of women as women. In western society women are treated as trivial to men and nature is treated as inferior to the culture. Their analysis reveals that women are not only closer to nature; they are preservator and conservator of nature.

"Contemporary Perspectives on Ecofeminism" have contained with 11 Original chapters in which scholars were asked to rethink ecofeminism, proving fresh theoretical and and empirical insights into the contemporary salience of the subject. The chapters are united by an underpinning question : why is ecofeminism still needed to address the environmental emergencies and challenges of our times ? As a result , the inspiration for this book partly derives from this understanding of the history of ecofeminism and a contemporary ecofeminism. In the remainder of the chapter, we unpack the history of ecofeminism, elaborate the genesis and rationale of this edited collection , and conclude by discussing the structure and organization of the book.

WOMEN AND NATURE INTERFACE :

The term ecofeminism may raise the questions in our mind as to why women and nature are connected to each other , thus implying the needs to study the interface between woman and nature . Although some ecofeminists reject this connection , while others emphasize the association between woman and nature to be strong, most ecofeminists opine that the links between women and nature can be sustained on the basis of ideology , biology, ontology , and a history of oppression .

Ecofeminist analysis explores the connections between woman and nature and addresses the parallels between the oppression of nature and the oppression of women. These parallels include but are not limited to see women and nature as property and to see men as the curators of culture and women as the curators of nature and how men dominate women and nature. Ecofeminism emphasizes that both woman and nature must be respected.

The connection of women and nature is generally based on three claims of an empirical, conceptual, and epistemological character . First, the empirical claim shows that the firsthand victim of the impact of environmental deterioration is woman in the name of the development of science and technology because of her close association and dependency on nature. In short, the ecofeminist empirical claim examines the socio-political and economic structures that reduce many women's lives to poverty, ecological deprivation, and economic powerlessness . The second conceptual claim focuses on the construction of society on the basis of a "hierarchy and dualism" (Eaton & Lorentzen, 2003, p. 2), which reveals patriarchal ideologies as the root causes of domination of women and the exploitation of nature. The third claim is epistemological, centering on knowledge of nature. In this perspective, women have historically been agrarian cultivators and thus favour sustainable and renewable agriculture. Moreover, they are heralded as saviors of nature, invested with the mission to protect, preserve, and nurture the environment (Daly, 1978; Eaubonne, 1974; Merchant, 1980; Mies & Shiva, 1993; Ruther, 1975).

These are the three connections between women and nature which have paved the path for ecofeminism to frame debates on the exploitation of women and nature. The connection of women and nature is generally based on three claims of an empirical, conceptual, and epistemological character (Eaton & Lorentzen, 2003; Warren, 1996). First, the empirical claim shows that the firsthand victim of the impact of environmental deterioration is woman in the name of the development of science and technology because of her close association and dependency on nature. In short, the ecofeminist empirical claim examines the socio-political and economic structures that reduce many women's lives to poverty, ecological deprivation, and economic powerlessness (Eaton & Lorentzen, 2003, p. 2). The second conceptual claim focuses on the construction of society on the basis of a "hierarchy and dualism" (Eaton & Lorentzen, 2003, p. 2), which reveals patriarchal ideologies as the root causes of domination of women and the exploitation of nature. The third claim is epistemological, centering on knowledge of nature. In this perspective, women have historically been agrarian cultivators and thus favor sustainable and renewable agriculture. Moreover, they are heralded as saviors of nature, invested with the mission to protect, preserve, and nurture the environment (Daly, 1978; Eaubonne, 1974; Merchant, 1980; Mies & Shiva, 1993; Ruther, 1975). These are the three connections between women and nature which have paved the path for ecofeminism to frame debates on the exploitation of women and nature.

In western thought and literature one of the oldest binaries has been nature and culture. The two sides of the binary carry gender value : (a) Nature is feminine, and (b) Culture is masculine. Feminine nature is consisted with body , subjective, emotional and private. And masculine is consisted with mind, objective, rational and public. Ecofeminist theory asserts that capitalism reflects only paternalistic and patriarchal values. This notion implies that the effects of capitalism have not benefited women and has led to a harmful split between nature and culture.

THE BODY OF CONTEMPORARY PERSPECTIVES ON ECOFEMINISM :

*The book would not have happened without the insight , energy and commitment of our contributors. The major two writers, Mary Phillips and Nick Rumens are famous for their work. Mary Phillips is Reader in Organization Studies at the University of Bristol, UK , and Director of the Action Research and Critical Inquiry in Organizations research centre. Her current work critically analyses the gendered and asks how they might be re-imagined. She has published over 40 Scholarly articles, chapters and books and is Associate Editor of Gender, Work & Organization. And the second one, Nick Rumens is Professor in Organization Behaviour at Middlesex University, London, UK. He has a recently discovered passion for ecofeminism and how it intersects with critical studies on men and masculinities and queer theory in *Gender, Work & Organization, Critical Perspectives on Accounting and British Journal of Management.* His forthcoming book, *Queer Business: Queering Sexualities of Organization,* will be published by Routledge.

*As we and the contributors in this edition collection argue, it is now even more urgent that we develop the means to move from 'unhealthy, life-denying systems and relationships to healthy, life-affirming ones' so that we can live in this world in a way that recognizes and accommodates the denied relationships of dependency and enables us to acknowledge our debt to the sustaining others of the Earth'. We also argue that the carrying capability of the planet is collapsing and yet our dominant economic and political ideological exacerbate catastrophe . A deployment of medical ideas , strategies and politics which re-connect the human and more than human world is needed now more than ever. Some institutions are support to the development on Environment ,they are the Global Institution , the Overseas Development Institution and so on. The Overseas Development Institution found that climate change would impact directly on development goal such as food security, availability of water and health outcomes, and that these would then negatively effect gender equality, employment and income poverty . Those who

currently have the current global inequalities will be amplified. At the same time, The Global Institutions, many national governments and business continue to drag their feet in terms of transformative changes that are required to mitigate against disaster.

*Ecofeminism, in broad terms, has been conceived as both a theory and a movements that associates women and the environment; that describes the connections that throughout history have been established between women and nature from cultural, historical, psychological, spiritual, or political perspectives; that denounces the comparable degradation, subjection, and exploitation of women, nature, non-- human animals, and other marginalized social groups; and one that proposes diverse alternative solutions, addressing both gender and ecological vindications and hence trying to put an end to the violence exerted on women and the underprivileged, as well as to the destruction of natural resources and the extinction of non-human animals and species. One of the first ecofeminist thinkers, Rosemary Radford Ruther, author of New Woman/New Earth, wrote in this sense that, Women must see that there can be no liberation for them and no solution.

*This paper will be dedicated to explore the resolute of ecofeminism in the select book of Mary Phillips and Nick Rumens. This edited collection brings together the insights of 17 schoolers across 11 chapters , arranged in two parts: 'Theory' and 'Practice'. The first section examines the theoretical richness of ecofeminism, by new conceptual approaches. However, as stated above , ecofeminism has never been solely concerned with theory. Ecofeminist theories are an extension of ecofeminism into the realm of theoretical and philosophical discourse but they are also linked to action and forms of activism, insisting we should push for progressive environmental change and gender equality. In this section, then , bridging ecofeminism theories with practice forms an important theme that unites not only these chapters, but also those that follow in the second section of the book on practice.

In **chapter 1,** Niamh Moore begins with a genealogical analysis damaging effects of critiques of essentialism on ecofeminism. Arguably, in the desire to prove that ecofeminism is not essentialist, Moore points out that ecofeminists have inadvertently conceded that essentialism has constituted an appropriate and meaningful frame for theorizing ecofeminism and women and nature. Moore extends Noel Sturgeon's genealogical approach, discussing the ways in which ecofeminists described ecofeminism before it became overshadowed and mired in critiques of essentialism have responded to critiques of essentialism. Concluding her chapter with thoughts on the emergence of 'new materialism', Moore considers how this may be an intriguing lens through which to rethink ecofeminism. In **chapter 2,** Erika Cudworth's explores ecofeminist conceptualizations of human relations with non-human animals. There has not been a singular ecofeminist position on 'the animal question', although research has interrogated assumptions underpinning women's caring labour, questions of animal liberation and the use of animals as food, clothing and companions. Cudworth rethinks some of these issues, arguing that whatever the differences between specific positions and perspectives, this body of work has been influential in problematizing 'the human', 'the animal' and human relations with non-human animals. Specifically, it allows Cudworth to reconsider the intersectionalized dimensions of oppression that allow us to develop powerfull contemporary analyses of the ways the social system of gender relations is co-constituted through ideas and practices around 'nature' and species relations. Cudworth's chapter contributes to this field of study by advocating a particular feminist theorization of human relations with non-haman animals within the frame of 'critical animal studies'. In **chapter 3,** Mary Phillips's explores the inertia of Western governments, business and the public to make the transformative changes needed to live more sustainably. Phillips argues that we are physically and emotionally distant from the ways we impact on nature, which presents ecofeminism with a formidable

challenge. Confronting the twin problems of inertia and estrangement, Phillips proposes that embeddedness in nature. Recognizing that ecofeminism falls short of suggesting how body/nature awareness can be stimulated and translated into action, she combines ecofeminist philosophy with the work of French feminist Helene Cixous in order to support a revaluation and rewriting of the body which can help overcome our current inertia. In **chapter 4,** Adelheid Biesecker and Uta von Winterfeld's contribution starts from the position that the capitalist world is experiencing what has been conceptualized as a multiple crisis: a term used to highlight how the global economic or financial crisis is also an ecological crisis of climate and natural resources, a social crisis involving crisis retreat of welfare states and social coherence, and a political crisis of governance. Biesecker and von winterfeld focus on that takes place outside. Deriving insights from feminist Carole Pateman's work on the social contact and Val Plywood's critique of the separated self, Biesecker and Von Winterfeld discuss, using Germany's *A Social Contract for Sustainability* as a focal point for analysis, ecofeminist approaches to political economy and political ecology. Like other chapters of the book, Brydon-Miller and Hilsen's chapter build a bridge between theory and practice. The authors extend the commitment action researchers make to work for positive social change to include recognition of our responsibility to promote environmental justice and to acknowledge the inextricable relationship between ourselves and nature. The chapter argues that where action research and covenantal ethics can make the most important contribution to ecofeminism is in our understanding of the importance of the cogeneration of knowledge. Brydon-Miller and Hilsen conclude the chapter by reviewing a strategy for engaging in ethical reflection as well presenting some practical examples that illustrate how action research can reflect the values of covenants ethics and ecofeminism.

The Second part of the book moves toward an explicit focus on Practice, examining contemporary forms of ecofeminism in action. Trish Glazebrook begins by drawing on findings from a case study of women's framing to argue for implementation of UN climate adaptation funds to support women's subsistence rather than corporate farming in the Global South. Glazebrook's chapter insists that the needs of women in the Global South are pressing economist issues, not least because of the climate change impacts documented in the Fifth Assessment Report of the Intergovernmental about how UN climate funds can support women garments. Ida Sabelis , Tamarisk Van Vilet and Harry Weld draw on empirical research conducted with game rangers' wives in South Africa in order to bring to the fore the hitherto hidden experiences of these women ' living in the wilderness's . In so doing , Sabelis provide an important counterpoint to the procreation of one-sided male and masculine accounts of living and undertaking conservation work in the wilderness. Contributing to a strand of ecofeminist thought on how the intersectionality of nature and humans in lived experienced, they analyse the narratives of the 'bush wives ' , as some of their study participants call themselves, to explore if and how a more inclusive, gendered understanding of 'wilderness' emerging from their stories could enhance contemporary ecofeminist debates. Continuing in the context of south Africa, in chapter 8 Laura Weight analyses the performative nature of South Africa township tour. Wright explores how the township tour contributes to the construction of a specific tourist mythology in regard to landscape , gender, politics and racially defined social mobility in the so-called 'new' South Africa. With reference to a range of cultural artefacts such as songs, novels sculpture and film, Wright's chapter acts a counter to the tourism industry's potentially reductive representations not only of the South African landscape, but also of township spaces and residents. Wright posits that a postcolonial ecofeminism informed by the South African philosophy of *Ubuntu* can serve to help tourists more fully historicize the various social , political,

and cultural realities that have displaced South Africans from specific spatial environments.

The final three chapters continue to pursue this agenda, looking at narratives of climate change and climate justice through literature and film, natural resources management, and spiritual principles in business. Offering an ''empathetic, empirical and embodied intervention '', Gaard explores how narratives expounded through literature and film – specifically in climate change science fiction , or 'cli-fi' – might contribute to shifting the dominance of the environmental sciences in defining and proposing solutions on environmental problems. She argues for a far greater role for the environmental humanities, particularly in proposing alternative narratives to climate change that address its neglected underpinning in colonialism, neoliberalism, speciesism and gendered fundamentalism. Such narratives, it is suggested, offer " a powerful potential for creating an 'entangled empathy '......the affective mode that offers an avenue for understanding across differences" . In the chapter 10 also considers how different lenses , in her case those dealing with gender. She uses these to explore working practices in German forestry, discussing how approached of 'doing gender ' intersect with 'doing nature '. Katz ultimately concludes that natural resource management, such as forestry, "needs to move it's orientation away from a logic of exploitation, and needs to change its traditional cultural of masculinity with its controlling, regulating and optimising phantasy of nature understood as mechanistic model". And finally, in the chapter 11 Young and Taylor explore how ecofeminism ideals fit within conventional modernist organization management, finding that despite its radical spiritual roots, " the material and social contexts of organization mean it is also subject to continuous neganization with, contestation from and incorporation into the neoliberal marketplace" . Drawing on research with organizations in the US and Europe , they promote the role of the "

small innovations, vitality, educative processes and much needs shifts to organizing and managing called for in ecofeminism.

A FORUM FOR CHANGE IN SOCIAL CONSTRUCT :

Ecofeminism adds both a commitment to the environment and an awareness of the associations made between women and nature. Specifically, this philosophy emphasizes the ways both nature and women are treated by patriarchal society .

Ecofeminists understand human beings as not being separate from or above nature. They are one small part of a whole, rather than the pinnacle of nature. In separating nature from persons, humanity creates a concept of nature which is made up of dead, unintelligent matter. Given that the subjugation of women and nature is a social construct, not a biological determinant, these relationships have the potential to change. Ecofeminism provides a forum for this change. With burgeoning environmental destruction and historically oppressive power structures, it is important to examine closely alternative solutions to the woes of our communities, land and the earth itself.

While ecofeminists have made many connections between women and nature, the three ties that most strongly bind them are empirical, the conceptual and epistemological. Empirical data supports the notion that women often bear the responsibility of feeding and caring for their children while maintaining a household. In poorer countries especially, these duties make women and their children more vulnerable to the effects of environmental deterioration as they desperately search for basic resources with little to no financial and communal support. Conceptually, women are associated either culturally or symbolically with the earth: The claim is that dualistic conceptual structures identify women with femininity, the body, Earth, sexuality and flesh: and men with masculinity, spirit, mind and power. Dualisms such as reason/emotion, mind/body, culture/nature, heaven/Earth, and man/woman converge. This

implies that men have innate power over both women and nature. This dualistic structure was championed in the Greek world, perpetuated by Christianity, and reinforced later during the scientific revolution.

Finally, the epistemological connection results from the theoretical connections between women and nature; this approach suggests that because women are most adversely affected by environmental problems and generally associated with nature, they are in an epistemological privileged place. This means women are in a position to facilitate the creation of practical and intellectual ecological paradigms. Ecological impacts extend beyond childbirth and infant care. Women (particularly those in less developed countries) are often responsible for providing basic resources, like water, food, fuel and healthcare, while men move to urban settings for work. "Women in the Third World form the base of ecological activism. They are more likely than men to be tied to their living environment through a deep knowledge of plants animals and local ecology."

Women, and subsequently children, have become the most vulnerable to ecological destruction, but they are also seen as being the closest to nature, making their love and attention towards environmental issues the most plausible solution for a better future. Recognizing these intersections makes ecofeminism a valuable lens through which to view the important connections between struggling women and children and their environments, as well as an outlet for mutual support and advocacy.

Women from developing countries pointed to the effects of commercial food production, sweatshop labour, and poverty on their families and their landscapes. They accused white ecofeminists of promoting that exploitation by purchasing goods created as a result of inequity. They also took issue with the appropriation of indigenous cultures and religions for the purpose of advancing a philosophical position. Thus, contemporary ecofeminism must be developed to acknowledge the very real effects of race, class,

ethnicity, and sexuality on a woman's social position. Women involved in environmental justice issues and women representing minority cultures have worked to establish their own sense of ecofeminism to include local cultures and spirituality, a celebration of their roles as mothers and caretakers, and a recognition of the ways in which Western colonization compromised those beliefs.

CONCLUSION :

I think that the second decision here is to establish whether ecofeminism came to be too theoretically oriented and constrained, or if it should have more clearly practical aims and hence to declare itself more openly as a form of political activism. Once again, representatives of these two tendencies are not difficult to find in the already prolific literature arising from the movement. In fact, the transition from the 1970s to the 1980s can be described as a passage from theoretical and abstract pronouncements to more clearly practical vindications and applications of ecofeminist tenets. Nevertheless, this tendency is to make ecofeminists choose, and forcing them to operate with alternatives in this way is certainly dangerous, since it can lead us to think that ecofeminism has been compelled to work with an either/or system of choices, when in fact its main methodological target, at least in terms of its more recent proponents, was precisely the questioning and deconstruction of those traditional oppositions historically found in the Western binary system of thought and that established hierarchical distinctions between pairs such as culture versus nature, men versus women, human versus non-human, reason versus emotion, or theory versus practice.

It is true to say that early ecofeminism still bore the marks of traditional conceptual binary oppositions and that these were used in favour its own gender and ecological concerns. The 1970s saw the appearance of works such as Rosemary Radford Ruether's New Woman/New Earth (1975), Mary Daly's Gyn/Ecology (1978), Susan Griffin's Woman and Nature (1978), and Carolyn Merchant's The

Death of Nature (1980). These authors still operated with dualisms such as woman-nature that worked in opposition to that of men-culture. Notwithstanding, they privileged the first of these pairs in an attempt to reconsider and reassess a reverence and respect for nature and for women that, according to their diverse interpretations, had been lost. Thus, in the case of Carolyn Merchant, it was the scientific revolution that fostered the separation of nature from culture and the devaluation of the former as dead, inert, and mechanistic.

Other early ecofeminists perceived the beginnings of the degradation of women and nature in the establishment of patriarchal societies that substituted previous matriarchal cultures, and the replacement of those goddess religions that regarded the earth and women as sacred, by patriarchal male deities who opted for the domination of both nature and women.

The quilt woven by this book is indeed a rich and varied one Each patch depicts its own nuanced ideas and portray specific situations, but the patches are well sewn together. The threads which connect them include a desire to uncover the lives and society, a commitment to action as well as academia, and a pledge to promote pluralism over universalism. Such sentiments have for radical geographers interested in questions of equality, justice, health, well-being and sustainability.

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COURSE CODE	: –	**MAENGLC304**
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Contents

A STUDY OF SHIRLEY JACKSON'S "THE LOTTERY" IN THE LIGHT OF MARXIST CRITICISM

Abstract:

Shirley Jackson's "The Lottery" is one of the most anthologized, distressful, and shocking stories of the 1950s America. Generally, the lottery means someone who is rewarded with money or some exciting prizes. But in this short story lottery represents a tradition or an old ritual which becomes a tragic incident at the end of the story.

The present study intends to examine the context of the story - if there is any link with the events of Shirley Jackson's own life or she intentionally made the main character 'Tessie Hutchinson' commit suicide to express her feelings through the victim's death as the result of being so much integrated within the structure of the society. It also intends to investigate the attack on capitalism and contemporary social conditions of Post-World war II America through the various references used in "The Lottery" by Shirley Jackson. There are so many indications clearly showing that the short story is an attack on the ideology and social order of the town making itself an anti-capitalist work.

Based on this, the term paper is divided into two parts. The first part will describe the possible reasons and social and political context behind writing this type of controversial anti-capitalist story and the second part will be devoted to the analysis of the traces of Marxism which we can find in "The Lottery". Hence, through this paper, it is tried to review the story "The Lottery" in the lights of Marxists approach.

Key Words: Class, Marxism, Ideology, Society

Introduction:

A literary work is a source which reflects a social condition when the work is being written. There are many questions how literature describes the society: its social status, social construction, its economic, social and political administration system and so forth. Thus, the work describes and defines the influence of a literary product in a society through Marxist thinking and vice-versa.

"The Lottery" written by Shirley Jackson is a short story first published on 26th June 1948 in a weekly magazine named 'The New Yorker'. It is one of the most controversial stories written by an American writer. The story gives us a description of an unknown small town in the Post World War America. It is a story about an annual ritual that took place in the month of June in almost every town in America. In this ritual a member of the community was selected through random irrespective of caste, gender, appearance, religion, social class, or family background and then he/she was killed by throwing stones. The inhabitants of the town started to sacrifice humans once a year only to improve their harvest. It was believed is that time that if the people of the town have stopped this ritual, they will have to suffer the consequences.

Chapter: 1

1.1 Context:

"The Lottery" was published after the World War II and near the beginning of the Cold War era. The position of women in United States society in 1945s became an issue of interest in the mid-1900s, with marriage and feminine domesticity depicted as the primary goal for the American woman. As women had been forced out of the labour market by men returning from the military service, many chafed at the social expectations of being an idle stay-at-home housewife who cooked, cleaned, shopped, served their husbands, took care of the family members, and tended to the children. Though Shirley Jackson set her story in an undefined

time and place, a reflection of her own life could also be found in this short story. The author herself had led a painful life of identity crisis and depression from her childhood to her adulthood and even after her marriage.

The idea of women being forced from one position of power to a lower position is clearly shown in the last scene of "The Lottery" when the "winner" Tessie Hutchinson is the one who receives the black dot and is stoned to death. She tries to fight for her life but in the end is overpowered by society's rules and regulations. The actual incident of stoning can be a symbol of the women who fought to keep their jobs and were badgered and criticized by the public. Because people thought that for women the actual place is in their home as a housewife. Here, Shirley Jackson tries to connect herself with the character 'Tessie Hutchinson' in terms of power, position, and struggle for her own against the patriarchal and capitalist society. The author too sacrificed her writing, her passion, her dreams to fulfil the needs of her family. But her family never felt that sacrifice. She fought for her identity. She struggled to make her position affirm in the society just like her husband has.

An additional aspect of division demonstrated during the 1940s was once a woman was married, she took her husband's name and was seen as becoming part of his family, but the woman's family is to some extent tossed to the side and disregarded. This is expressed in the story when Tessie Hutchinson questions why married daughters are only able to pull for their husband's families but not for their own families: "***daughters draw their husband's families, Tessie, you know that as well as anyone else***" (Jackson)*.* Because in a patriarchal society, women are considered subordinate to men because of their position in the family and the society.

There are two links that can be found between the writer's own experiences and the picture of society she tries to depict in her story "The Lottery". **Firstly**, the town as described in the story seems to be alike to a rural area in which Shirley Jackson lived when she took down

the story. It is believed that Jackson modelled the town of her story after North Bennington in Vermont where she and her husband started living after their marriage in 1940. **Secondly**, in the short story town's people's violence may have its origin in an incident from Shirley Jackson's own life. She wrote the story after she had been attacked with stones by some school children while she had been going home from her workplace.

In 1948 issue of the San Francisco Chronicle Jackson explained her reasons behind taking down this short story:

"Explaining just what I had hoped the story to say is very difficult. I suppose, I hoped, by setting a particularly brutal ancient rite in the present and in my own village to shock the story's readers with a graphic dramatization of the pointless violence and general inhumanity in their own lives." (Haven).

And how was the story written?

According to Jackson, speaking at a lecture, "*I had the idea fairly clearly in my mind when I put my daughter in her playpen and the frozen vegetables in the refrigerator and, writing the story, I found that it went quickly and easily, moving from beginning to end without pause. As a matter of fact, when I read it over later, I decided that except for one or two minor corrections, it needed no changes, and the story I finally typed up and sent off to my agent the next day was almost word for word the original draft*." (Haven)

Chapter: 2

2.1 Marxist Literary Theory:

Marxism literary theory comes from the philosophical concept of Marxism, which is proposed by Karl Marx, a German Philosopher. Marx reverses this formulation and argues that all mental (ideological) systems are the products of real social and economic existence. The material interests of the dominant social class determine how people see human existence,

individual and collective. Legal systems, for example, are not the pure manifestations of human or divine reason, but ultimately reflect the interests of the dominant class in particular historical periods (Raman Selden).

The main aim of Marxism is to bring about a classless society, based on the common ownership of the means of production, distribution, and exchange. The simplest Marxist model of society sees it as constituted by a base (the material means of production, distribution, and exchange) and a superstructure which is the 'cultural' world of ideas, art, religion, law, and so on. The essential Marxist view is that the latter things are not 'innocent' but are 'determined' by the nature of the economic base. This belief about culture, knows as economic determination, is a central part of the traditional Marxist thinking (Barry).

In regard to ideology, Marx thinks that as the base determines the superstructure; it essentially holds up the ideologies of the base. Ideologies are the changing concepts, values and feelings through which each and every person experiences their societies. They put forward the dominant ideas and values as the beliefs of their society, thus preventing everyone from discovering exactly how the society functions. Marxist critics, in this respect, interpret literature in terms of ideology. Writers who show sympathy to the working classes or lower classes and their struggle are admired favorably and writers who support the ideology of the dominant or powerful classes are disgraced. Naturally, critics of the Marxist school differ in breadth and sympathy the way other critics do. Marxist criticism is materialist, so it has more in common with the ideas that focus upon how literature functions within social, political, and economic structures, than it does with theories that focus only upon the text.

2.2 Marxist Approach in the story:

If someone looks at the title of the story, he or she can easily say that it is a story about a winner who receives a positive response or a reward. But he will be shocked when he reaches at the end after going through the entire story. Here, Jackson's story ends not with a winner but

with a loser who is stoned to death by the townspeople and even her own children. Now if we go through the short story very carefully and deeply, we can find that there are so many theories like Marxism, Psycho-Analytic criticism, Feminism that we can discuss.

Basically, Marxism literary theory, focuses to change the whole world from a place of partiality, hatred, and disagreement due to class struggle which is caused by the dominant classes to classless society where property and opportunity are always available for all the individuals. Originated and developed by Karl Marx, Marxism literary theory then conveys its aim through the literature, as a cultural production, and as a form of ideology, one that validates the power, the position and the status of the dominant classes. Karl Marx criticized the unfair treatment with the working classes, or proletariat, by the capitalist or dominant classes who were at that time the owners of the mines, factories, and other resources of the nation through the literary work in the nineteenth century.

Shirley Jackson's "The Lottery" shows us how the ruling class or dominant class in a society can control the lower class or the working class through fear and subtle manipulation of the proletariat. In the short story "The Lottery" there is a tradition which involves the New England township people to select a winner and therefore, to be selected as a winner for a lottery. And finally, the winner or the victim will be stoned to death. In the short story there is a character named Mr. Summers who control the whole process from the beginning to the end. It is his responsibility to lead the lottery. For example, when Tessie Hutchinson suggests her daughter to be considered as a member of the Hutchinson family in the second trial of the lottery, it is Mr. Summers who says that "***daughters draw their husband's families, Tessie, you know that as well as anyone else*** (Jackson)***".*** So, in this way he represents the dominant classes who owns all the powers of that time to operate the society. In addition, the women in that society are low in status. They have no power and only the men in their families can pick the lottery for the families and if the man of the family is absent, his son represents him instead

of the wife. Just like in a capitalist society, people who have no power have no say in the affairs of the society, which is left to the powerful few. Moreover, the site of the lottery which is between two buildings – the post office and the bank – represents the political and economic power of the government and those who are in power like Mr. Summers and Mr. Graves.

Based on the concept of Marxism, "The Lottery" is considered as an ideological mechanism; that is to say it serves to strengthen the township people's hierarchical social order by establishing an unconscious fear that if they don't follow the order, they might be the victim in the next lottery. Capitalism is the main concept or the ideology of the story. There are so many instances that prove the town a modern capitalist society. Mr. Summers who is the owner of the town's largest business which is coal business and who is also the mayor of that town: "***The lottery was conducted – as were the square dances, the teen club, and the Halloween program – by Mr. Summers who had time and energy to devote to civic activities. He was a round-faced, jovial man and he ran the coal business*** (Jackson)*".* Then there is Mr. Graves who is the postmaster of that town regarded as the second most powerful government official: "***The postmaster, Mr. Graves, followed him carrying a three-legged stool*** (Jackson)*".* And finally, there is Mr. Martin who has economically advantageous position in the town as he is the grocer of the town. These three men, known as the most powerful men in the town, conduct the lottery. When the lottery is not being conducted the old black box is kept in one of their homes or the places of business: "***The rest of the year, the box was put way, sometimes one place, sometimes another; it had spent one year in Mr. Graves's barn and another year underfoot in the post office, and sometimes it was set on a shelf in the Martin grocery and left there*** (Jackson)*".*

Another instance of Marxist criticism lied in the participation rules created by the ancestors for the lottery. It seems to play a vital role in the lottery. First of all, these rules are made only for the common people of the town. Those rules are not applied to the upper classes

of the society. Because they economically and politically control the whole town and also, they are the administrator of that town as well as of the lottery and they have no chance of being victims of stoning: "*Who is it?" "Who's got it?" "Is it the Dunbars?" "Is it the Watsons?" "It's Hutchinson. It's Bill," "Bill Hutchinson's got it.* (Jackson)*".* From the above quote we can say that the two families Dunbars and Watsons are not the most powerful in the town, if they were then why did not ask whether the Graves or the Summers had it? So, in that sense those rules show us who has and who does not have the authority in the town's hierarchical order. It determines the process of selection in the lottery. The towns people are made to believe that it is democratic, and everyone gets equal chance of selection. It is like a communist illusion which is a conceptual effect that keeps the town's people from criticising the social class structure or the ruling class of the town.

It is mainly a story about an inhuman yearly tradition of a town and its effects and consequences. "The Lottery" presents a weakness in human individuals. The town has been celebrating such an inhuman ritual for many years with no questions asked and its main motive was to carry on the old ritual. "*Lottery in June, corn be heavy soon. There's always been a lottery* (Jackson)," old man Warner says. "*Nothing but trouble in that, pack of young fools* (Jackson)" he says when some people start talking about quitting the tradition: "*Some places have already quit lotteries*" (Jackson). Tessie Hutchinson who is a housewife shows her discordance with the process of the lottery when her husband is going to choose the lottery for her. And finally, she was stoned. In stoning Tessie, the villagers treat her as a scapegoat of a rebellion against the rules. Though some townspeople show some fear of the tradition by saying; "*Don't be nervous Jack, take your time, son* (Jackson)", nevertheless not a single person openly expresses fear or disgust towards the lottery instead of enthusiasm.

"The Lottery" is filled with symbols and references. In her short story "The Lottery," author Shirley Jackson uses several objects such as the lottery itself, the black box, stones and

character names to represent something more than just simple things or objects. These objects and symbols are woven together to paint a bleak picture of a small town that is blindly following an old tradition even though most of the people know nothing about it, nor do they really care about how it started. Jackson effectively uses these symbols to help the reader see the greater tragedy and danger in society when people blindly do something – either for good or bad – that everyone else is doing just because it's a tradition. This story is in many ways a parable more than a traditional story. A society so mired in its traditions that it has lost the ability to even look at the reasons for those traditions, but instead follows them blindly even when they hurt its citizens. The Lottery is a metaphor for the unconscious ideological mechanism of scapegoat. In choosing Tessie through the lottery, Jackson has attempted to show us whom the village might have chosen if the lottery had been in fact an election. Marxism, in this respect, reminds the class people to give a chance for women in taking part to eliminate the bigotry and the oppression.

Conclusion:

Marxism literary theory is used to review a literary work based on class struggle. It can be regarding two binary oppositions like the 'powerless' to the 'powerful' / 'lower class' to the 'higher class' / 'the people' to the 'government' and so on. "The Lottery" is a short story about the oppression committed by dominant class society to the classless society, in terms of fulfilling the needs. As a whole it is a great example of what happens when society is radically divided between two classes – high and low or Powerful and Powerless. When the wealthy gains absolute power, their tendency is to rule over the lower-class people through manipulation and fear. By characterizing the dominant classes and the lower classes Shirley Jackson perfectly portrayed the class struggle in the mid -1900s American society.

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Project Report of BBA Department

A Project Report

On

"Human Resource Development"

Degree of Bachelor in Business Administration 2021-2022

Under the Guidance of:	**Submitted By:**
Kajal Goswami	Debjani Pyke
	University Enrollment No:
	1031805128007013

Asansol Bidhan Chandra College,

Kazi Nazrul University

Certificate

This is to certify that Miss. Debjani Pyke studying in BBA 6th semester of B. C. College has successfully completed this project entitled "Study of Training and Development of Employees in Indorama Synthetics Ltd."

He was very sincere and honest in his work. We wish him all the best for future endeavors.

Mr. Kajal Goswami

Project Guide

Declaration

I hereby declare that project entitled "Study of Training and Development of Employees in Indorama Synthetics Ltd." is a bonafied and authentic record of work done by me under supervision of Mr. Ajay Dhobel during academic session 2020-2021.

The work presented here is not duplicated from any other source and also not submitted earlier for any other degree/diploma to any university.

I understand that any such duplication is liable to be punished in accordance with the university rules.

Place: Asansol

Miss. Debjani Pyke.

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Debjani Pyke

Index

Chapter 1

Introduction

Human Resource Development is an organized learning experience aimed at matching the organizational need for human resource with the individual need for career growth and development. It is a system and process involving organized series of learning activities designed to produce behavioral changes in human beings in such a way that they acquire desired level of competence for present or future role.

Human resource are the most important assets of an organization. Its objective is the maintenance of better human relations in the organization by the development, application and evaluation of policies, procedures and program relating to human resources to optimize their contribution towards the realization of organizational objectives. It is concerned with getting better results with the collaboration of people.

Introduction of the topic

One of the most talked subjects in corporate circles, in recent times is how to optimize the contributions of human resources in achieving organizational goals. An efficient and satisfied workforce in the most significant factor in organizational effectiveness and marginal excellence. But experience in business and service organizations however indicate that management, comparatively speaking, bestow more time and attention to policies and systems relating to production, technology, investment, inventory, marketing, etc. than to human resources.

Compulsion of modern business environment is however promoting corporate managements to systematically review their current attitudes, beliefs and policies towards human resources for they contribute most significantly to the survival and growth of organization. Enlightened and progressive managements have therefore come to believe that people are not problems but opportunities. Training and Development activities are important part of exploring these opportunities.

Training and Development activities are designed to impart specific skills, abilities and knowledge to employees. Training is a planned effort by on organization to facilitate employee's learning of job-related knowledge and skills for the purpose of improving performance. Development refers to learning opportunities designed to help employees grow and evolve a vision for future.

Chapter 2

1. Define Training. What is the importance of training

Training is the process of increasing the knowledge and skills for doing a particular job. It is an organized procedure by which people learn knowledge and skill for a definite purpose.

Importance of Training: - A well- planned and well- executed training can provide the following advantage:

i. <u>Higher Productivity</u>: Training helps to improve the level of performance. Trained employees perform better by using better method of work.

ii. <u>Better Quality of Work</u>: In formal training the best methods are standardized and taught to employees. Uniformity of work methods and procedures helps to improve the quality of product or service.

iii. <u>Less Learning Period</u>: A systematic training program helps to reduce the time and cost involved in learning. Employees can more quickly reach the acceptable level of performance.

iv. <u>Cost Reduction</u>: Trained employees make more economical use of materials and machinery. Reduction in wastage and productivity helps to minimize cost of production.

v. <u>Reduced Supervision</u>: Well trained employees tend to be self- reliant and motivated. They need less guidance and control. Therefore, supervisory burden is reduced.

vi. <u>Low Accident Rate</u>: Trained employees adopt the right work methods and make use of the prescribed safety devices. Therefore, the frequency of accident is reduced.

vii. <u>Organizational Climate</u>: A sound training program helps to improve the climate of an organization. Industrial relations and discipline are improved.

2. Distinguish between Training and Development

TRAINING	DEVELOPMENT
Def: - i. Training is a short-term learning process in which employees get an opportunity to develop skill, competency and knowledge as per the job requirement.	Def: - i. Development is a long- term educational process which is concerned with the overall growth of the employees.
ii. TERM: - It is a short-term process.	ii. It is a long – term process.
iii. Focus: - Training focusses on developing skill and knowledge for the warrant job.	iii. Development focusses on developing knowledge, understanding and competencies for overcoming with future challenges.
iv. Orientation: - Training is specific job- oriented.	iv. Development is career-oriented.
v. Scope: - Training has a limited scope.	v Its scope is comparatively winder then training.
vi. Motivation: - Trainer	vi Motivation: - Self.
vii. Objective: - To improve the work performance of the employee.	vii. To prepare employees for future challenges.
viii. Number of Individuals: - Many	viii. Number of individuals: - Only one.
ix. Aim: - Specific job related.	ix Aim: - Conceptual and general knowledge related.

3. Explain the needs for Training

Training is needed for the following reasons –

i.   <u>Job Requirements</u>: Employees selected for a job might lack the qualifications required to perform the job effectively. New and inexperienced employees need detailed instruction for effective performance on the job.

ii. <u>Technological Changes</u>: Technology is changing very fast. Now, automation and mechanization are being increasingly applied in offices and in-service sector. Increasing us of fast- changing technologies requires training into new technology.

iii. <u>Organizational Validity</u>: In order to survive and grow, an organization must continually adept in self to the changing environment. An organization can build up a second line of commend through training in order to meet its future need for human resources.

iv. <u>Internal Mobility</u>: Training becomes necessary when an employee moves from job to another due to promotion and transfer. Training is widely used to proper employee for higher level jobs.

4. Explain the issues in identifying training needs

All training activities must be related to the specific needs of the organization and the individual's employees. A training program should be launched only after the training needs are assessed clearly and specifically. Training needs can be identified through the following types of analysis.

Organizational Analysis: - It involves a study of the entire organization in terms of its objectives, its resources, resource allocation and utilization. Organizational analysis consists of the following elements.

i. Analysis of Objectives: This is a study of short- term and long- term objectives and the strategies followed at various levels to meet these objectives.

ii. Resource Utilization Analysis: How the various organizational resources are utilized is the main focus of this study.

iii. Organization Climate Analysis: The prevailing climate of an organization reflects the members attitude. It also represents management's attitude towards employee development.

iv. Environmental Scanning: Here the economic, political, socio- cultural and technological environment of the organization is examined.

Task or Role Analysis: - It is a systematic and detailed analysis of jobs to identify job contents, the knowledge, skills and the work behavior. On the part of the job holder, particular attention should be paid to the task to be performed.

Manpower Analysis: - In this analysis, the persons to be trained and the changes required in the knowledge, skills and aptitudes of an employee are determined.

- First of all, it is necessary to decide whether performance and training is needed.
- Secondly, it is determined whether the employee is capable of being trained.
- Thirdly, the specific areas in which the individuals require training.
- Lastly, whether training will improve employee's performance or not. Other alternatives to training i.e. modification in the job, new process, etc.

5. Discuss the different training methods

Training methods are generally classified by the location of instruction. The different types of training methods-

On the Job Training: - Under this method the trainee is placed on a regular job and taught the skills necessary to perform it. The trainee learns by observing and handling the job, So, it is called "Learning by Doing".

Several methods of on the job training are as follows:

1. Job Instruction Training: It is used primarily to each worker how to do their current job. A trainer, supervision acts as the coach. The JIT involves the following steps:

i. The trainee receives an idea of the job, its purpose and its desired outcomes with a clear focus on the relevance of training.
ii. The trainer demonstrates the job in order to give the employee a model copy.
iii. Next the employee permitted to copy the trainer's way.
iv. Finally, the employee does the job without supervision.

Merits:

i. The main advantage is that the trainee learns on the actual machine in use and in the real environment of the job.
ii. This method is very economical.
iii. The trainee learns the rules, regulation and procedures of the job by observing their day- to- day application.
iv. This is the most suitable method for teaching knowledge and skills.

Demerits:

i. The trainee finds it difficult to concentrate due to noise in actual workplace.
ii. The trainee may cause damage to costly machines and materials.

In spite of the above disadvantage, JIT is the most widely used and accepted methods of OJT.

2. Coaching: - Coaching is the type of daily training and feedback given to employees by immediate supervisors. It involves a continuous process of learning by doing and answers questions, he offers a model for trainees to copy, conducts lot of decision-making meeting with trainees.

3. Mentoring: - Mentoring is a relationship in which a senior manager in an organization assumes the responsibility for grooming a junior person. In a work situation such mentoring can take place at both formal and informal levels.

4. Job Rotation: - It involves movement and transfer of trainee from one position to another position on some planned basis. The objective of job rotation is to broaden the knowledge, skills and outlook of trainees.

5. Committee Assignments: - In this method, the trainees are asked to solve an actual business problem. The trainees have to work together and offer solution to the problem. Assigning talented employees to important committees can give these employees a broad experience and can help them to understand the real problem.

Off-the-Job-Training: - Under this method, the trainee learns outside the job and devotes whole time on learning. The different methods off- the- job-training are:

1. Vestibule Training: In this method, a training center is called vestibule is set up and actual job conditions are duplicated in it. Experts trainer trains the employees with the help of equipment and machines.

   Merits:

   i. The main advantage of vestibule training is that the trainee can concentrate without disturbance of the workplace noise.
   ii. The interest and motivation of the trainee are high as the real job conditions are duplicated.
   iii. Correct method can be taught by the trained instructor who knows how to teach.
   iv. It permits the trainee to practice without fear.

   Demerits:

   i. Vestibule training is highly expensive.
   ii. The training situation is somewhat artificial and the trainee does not get a feel of the real job.
   iii. Separation of training from the supervisors may lead to problem in the organization.

2. Apprenticeship Training: In this method, theoretical instruction and practical learning are provided to trainees in training institutes. Generally, a stipend is paid during the training period.

   Merits:

   i. The main advantage of this method is that it combines theory and practice.
   ii. The trainee acquires skills which are valuable in job market.

   Demerits:

   i. It is time consuming and expensive.
   ii. Many persons leave the training midway as the period ranges one year to five years.

3. Classroom Training: Under this method, training is provided in company classrooms case studies, group discussion and audiovisual aids are used to explain knowledge and skills to the trainees. It is useful for orientation and safety training programs.

4. Internship Training: It is a joint program of training in which educational institutions and business firms co- operate. Selected candidates carry on regular studies for the prescribed period. This method of training is used in professional studies such as MBBS, CA, MBA, etc.

5. E- Learning: Business firms are using electronic technology for training in modern times. E-Learning methods include training thought CD-ROM, Internet and Intranet, etc. E-Learning makes use of social welfare such as

blogs, wikis and virtual world. This phenomenon is also known as "Long Trait Learning".

6. Define Management Development or Executive Development. What is the nature of Executive Development

Executive Development or Management Development is a systematic process of learning and growth by which managerial personnel going and apply knowledge skill, attitudes and insights to manage the work in their organization effectively and efficiently. It is an educational process through which executives and conceptual and theoretical knowledge and managerial skills in an organized manner. Management Development involves relating experience to learning.

Features/ Natures of Executive Development: -

The features/ natures/ characteristics of ED may be stated as follows:

1. It is an ongoing or never- ending process rather than a one- shot affair. It continues throughout an executive's entire professional career because there is end to learning.
2. Executive Development (ED) is a planned and organized process of learning rather than a trial and error approach.
3. ED is a long- term process as managerial skills cannot be developed overnight.
4. ED is guided self- development. An organization can provide opportunities for development of its present and potential managers, But the image for learning has to come from the executive himself. It is possible only when the individual has the desire to learn and practice what he learns. No amount of coercion can lead to development.
5. ED aims at preparing managers for better performance and helping them to realize their full potential.

7. Explain the objectives of Executive Development/ Management Development

Executive Development aims at achieving the following objectives:

i. To improve the performance of managers at all levels in their present jobs.

ii. To sustain good performance of managers throughout their careers by exploiting their full potential i.e. to prepare managers for higher jobs in future.

iii. To ensure availability of required number of managers with the needed skills so as to meet the present and anticipated future needs of the organization.

iv. To prevent obsolescence of executives by exposing them to the latest concept and techniques in their respective areas of specialization.

v. To replace elderly executives who have risen from the ranks by highly competent and academically qualified professionals.

vi. To provide opportunities to executives to fulfill their career aspirations.

vii. To ensure that the managerial resources of the organization are utilized optimally.

8. Explain the importance of Executive Development/ Management Development

Executive Development is necessary for the following reasons:

i. The size and complexities of organization are increasing day to day. Managers need to be developed to handle the problems of giant and complex organization in the face of increasing competition.

ii. The rapid rate of technological and social change in society requires training of managers so that they are able to cope with these changes. Automation, cut-throat competition, growth of new markets are the major problems that are to be handled.

iii. Business and industrial leaders are increasingly recognizing their social and public responsibility. Executive Development is required to broader the outlook of managers.

iv. Laboure Management relations are becoming increasingly complex. Managers requires new and greater skills in collective bargaining, union negotiation, grievance redressal, etc. More competent managers are needed to manage the modern workforce.

v. M. D programs are required to train and develop professional managers.

vi. Managers need education and training to understand and adjust to changes in socio- economic forces, without M. D programs executives may become obsolete. Managers will not be able to survive in future unless they keep pace with modern management education, research, principle and practices.

vii. Management of public utilities, state enterprises and civic bodies is being professionalized in order to improve operational efficiency.

No organization can be successful in the long run without a planned approach to the development of its managerial persons. In the word of P. F. Ducker- "An institution that cannot produce its own managers will die".

9. Methods and Techniques of M. D Programs or Types of M. D Programs

Various methods of M. D may be classified into two broad categories:

On the Job Methods: - On the job training is most suitable when the aim is to improve on the job behavior of executives. It includes the following:

1. Coaching: In this method the superior guides and instructs the trainee as a coach. The coach sets mutually agreed upon goals, suggests how to achieve these goals.

   Merits: Coaching method offers following advantages:
   i. It is learning by doing.
   ii. Every executive can coach his sub- ordinates even if on executive development program exists.
   iii. Periodic feedback and evaluation are a part of coaching.
   iv. It is very useful for orientation of new executives and for developing operative skills.
   v. It involves close interactions between the trainee and his boss.

   However coaching method suffers from the following limitations/ Demerits:
   i. It tends to perpetuate current managerial styles and practices in the organization.
   ii. It requires that the superior is a good teacher and guide.
   iii. The training atmosphere is not free from the worries of daily routine.
   iv. The trainee may not get sufficient time to make mistakes an earn from experience.

2. Understudy: An understudy is a person selected and being trained as the heir apparent to assume at a future time the full duties and responsibilities of the position presently held by his superior. The superior routes much of the department work through the junior, discusses problem with him and allows him to participate in the decision- making process as often as possible.

   Merits: Understudy method provides many advantages-
   i. The trainee receives continuous guidance from the senior and gets the opportunity to see the total job.
   ii. It is practical and time saving due to learning be doing.
   iii. The trainee takes interest and shares the supervision's workload.
   iv. The junior and the senior come closer to each other.
   v. It ensures continuity of management when the superior leaves his position.

   Demerits: Understudy method, however suffers from the following disadvantages-
   i. It perpetuates the existing managerial practices.
   ii. As one employee is identified in advance as the next occupant of a higher-level managerial position, the motivation of other employees in the unit may be affected.
   iii. The sub- ordinate staff may ignore the understudy and treat him as an intruder without clear authority and responsibility.

iv. Under an overbearing senior, the understudy may lose his freedom of thought and action. The success of this method depends upon the teaching skills and cooperation of the superior with whom the understudy is attached.

3. Position Rotation: It involves movement or transfer of executives from one position or job to another on some planned basis. Position rotation is also called Job Rotation.

   Merits: Job rotation method offers the following advantages-
   i. It helps to reduce monotony and boredom by providing variety of work.
   ii. It facilitates inter- department co- operation and co- ordination.
   iii. It infuses new concepts and ideas into elder personnel.
   iv. Executives get a chance to move up to higher position by developing them into generalists.
   v. Best utilization can be made of each executive's skills.

   Demerits: This method suffers from the following limitations-
   i. Job rotation may cause disturbance in established operations.
   ii. The trainee executives may find in difficult to adjust himself to frequent moves.
   iii. The new incumbent may introduce ill-conceived and hasty innovations causing loss to the organization.
   iv. It may cause jealousy and friction due to the game of musical chairs.
   v. Job rotation can cause class distinctions and mis- understanding.
   vi. It may upset family and home life when transfers are made to different geographical areas.

4. Multiple Management: Under this method, a junior broad of young executives is constituted. Major problems are analyzed in the junior board.

   Advantages: This method offers the following advantages-
   i. The participants gain practical experience in group decision making and team work.
   ii. The committee or board contributes to the productivity and human relations in the organization.
   iii. The methods help to identify executive talent.
   iv. It is relatively inexpensive method.

   Disadvantages: this method suffers in the following limitations-
   i. Specific attention to the developmental needs of executives is not possible.
   ii. The method is not suitable for lower level executives.
   iii. The discussion in committees and boards often degenerate into academic debates.
   iv. There is a lack of commitment on the part of the participant.

Off the Job Method: -

1. Lectures: These are formally organized talks by an instructor on specific topics.

   Merits:

i. It is a simple and inexpensive way of imparting knowledge on a particular topic.
ii. A large number of audiences can be benefitted from this method.
iii. There could be a speedy interchange of ideas on a specific topic.

iv. The method passing attention to the reactions of the audience.

<u>Demerits:</u>

i. Lecture is a one-way communication. There is no participation and feedback from the audience.
ii. The audience losses attention quickly as they are passive listeners.
iii. It requires a great deal of preparations and speaking skill for which executives may lack time.
iv. The presentation of material has to be geared to a common level of knowledge.

2. <u>Case- Study Method</u>: Under this method, a real or artificial business problem is presented to the trainees. They are required to identify and analyze the problem.

<u>Merits:</u>

i. It promotes analytical thinking and problem-solving skills.
ii. It encourages open mindedness and provides a means of integrating knowledge.
iii. The trainees become aware of managerial concepts and processes and their application to specific situations.
iv. Detailed descriptions of real-life situations help to create interest of trainees.

<u>Demerits:</u> It suffers from the following limitations-

i. A case may degenerate into a dreary history undermining analytical reasoning.
ii. It may suppress the critical faculties of mediocre trainees.
iii. The cases may be used indiscriminately as permanent precedents.
iv. It is time taking and expensive to prepare good case studies.

Chapter 3

About Indorama Company

Indorama, the giant textile ltd. Company ranks 15th globally and is the 2nd largest textile company in India. The history of this successful company being with the establishment of the Ashok Textile Industry (P) Ltd, in Nepal in the year 1969. The group was founded by Mr. M. L. Lahiya with the establishment pf PT. Indorama Synthetics in Indonesia.

This world- renowned group was then extended to Thailand, Srilanka, and India.

In India the first spinning mill was set at Pithampur, which manufactured Synthetic yarns with a capacity of 21,120 Spindles.

In the year 1992 the group came in Butibori, Nagpur with its new plant, which actually started functioning in the year 1994. The subsidiaries of IRSL are also sent in the Butibori industrial area. These include the text print overseas Ltd, and two units of Unsworth viz, Woolworth Ind. Ltd, and Ebsworth Ind. ltd.

As per memorandum and articles of Association, the Board of Director of the company shall consist of not more than 12 Directors. The present Board comprise of 9 Director of whom 3 belong to the promoter and 4 are outside professionals, one nominee each of IFCI and MPAVN.

Products: -

The company is basically producing five different products: -

1. PSF: Polyester Staple Fiber.
2. POY: Partially Oriented Yarn.
3. DTY: Draw Textured Yarn.
4. FDY: Fully Draw Yarn.
5. PC: Polyester Chips.

Raw Materials: -

Following are raw materials used: -

1. Purified terephthalic acid. (PTA)
2. Mono ethylene glycol. (MEG)
3. Viscose staple fiber
4. Polyester staple fiber
5. Polyester filament yarn

Area of Export and Awards: -

Indorama export its products mainly to Germany, Portugal, Greece and Turkey, UK, Italy. The company has been awarded national Export Award from the President of India for tis outstanding performance in the field of exports, on the year 1997-1998. In 1997 company also received "Niryat- Shri" award from the Februation of International Export Organization. The company has also been receiving the SRTECP Award for overall export for ninth year running. The company has also been awarded by the ISO-9002 certificate by SGS, UK, for its quality performance.

Chapter 4

Objectives of the project

The project is entitled as, "Study of Training and Development of employees in Indorama synthetics (India) ltd. Butibori," So, the basic objectives of the project is as follows: -

- To acquire a thorough knowledge base on subject of Training and Development.
- To study how Training and Development programs are undertaken in the organization.
- To know process of Training and Development at Indorama synthetics (I) ltd.
- To study the induction program at IRSL.
- To study the effectiveness of Training and Development in the organization.
- To measure the satisfaction level of employees regarding training and development.

Chapter 5

Training and Development at Indorama Synthetics (India) Ltd.

Training is the process of increasing the knowledge and skills for doing a particular job. It is organized procedure by which people learn knowledge and skill for a definite purpose. The purpose of training is basically to bridge the gap between jobs basically to bridge the gap between jobs requirement and present competence of an employee. Training is closely related with the education and development.

Employee Training is distinct from management development. Training is the short-term process utilizing a systematic and organized procedure by which non- managerial personnel learn technical and mechanical operations of machines. It for short duration and for specific job-related purpose.

Development is the long-term process utilizing a systematic and organized procedure by which managerial personnel learn conceptual and theoretical knowledge for general purpose. It involves philosophical and theoretical educational concept and it is designed for manager.

The IRSL provides the training session to every level of employee in the organization. It begins from manager level to the worked level

Even the new fresher including Management Trainee (MT's) and General Engineering Trainee (GET's) gets the training.

Training Program

The training program is given at IRSL at every month according to the training calendar is being schedule. The induction program at IRSL is normally of 6 months. It is designed as per the departmental requirements.

It the beginning of this program, the employee is required to fill a particular from. This from contains his basic information. The induction program for the employee is designed after studying this from, taking into consideration his background, areas of interests, weaknesses, strengths etc.

Normally, Butibori is the only center for induction at IRSL. Employees from different place are trained at Butibori plant. To begin with the induction the very first thing is to develop amongst these employees, a feeling of togetherness. For this, these employees are given classroom training for about a month. Various department come to the class room to deliver lecture. During these classrooms training and employees get familiar and friendly with each other. To strengthen the feeling of togetherness and develop a sense of belonging groups are formed in the classroom. These groups are given various tasks and intergroup competitions are conducted. Thus, they are kept busy all the time.

In the evening these employees are taken for plant visit. Outing is also planned to frame people in the area. During this one-month training examinations business games, presentations are taken after this 1 month.
Here the GET's and MT's are taken to different units. In this training they learn the setup of the company. Until this rotational training the placement of the candidates is not disclosed. Placement are decided on completion of the rotational training. At placement branch again the candidate is sent to different department. This may take 2-4 months. Then they are back to their respective department. No leaves are allowed during the 6 months of induction period. After the completion of induction period a week's leave is permitted before joining.
The difference between the induction of GET's and MT's is that the MT's have to go deeper into the management part than the technical part.

At the end of the induction a report and feedback have to be submitted by the employee.

Induction of the GM and above level includes only the visit to different people. Induction program for workers is restricted to his department and place at work.

Behavioral Training in Indorama Synthetics (India) Ltd.

The procedure for imparting based on organizational needs to employees in Indorama are as follows: -

Organizational training needs: - Training needs based on organizational needs will be identified by the manager using training needs identification form. The base for such training is organizational requirements, change in system, procedure.

Planning and Organizing Training programs: - The HRD will make plan for training program based on needs of the firm. This may include training related to product image, process change, fire and safety, environmental change etc.

Specific Training Needs Through Respective Departmental Heads: - Based on training plan, training programs will be organized in-house or outside faculty. Participant may also be sent for outside training programs for specific training needs through respective departmental head. For the purpose of organizing in- house training program, the department can maintain a list of faculties available in the company. This list will serve as a guideline document. Records of training programs conducted will be maintained.

Evaluation of Training Programs: - The HRD will monitor progress on training needs collected with respect to plan. The evaluation will be done and record will be maintained for each employee to whom training has been imparted.

Measure of Effectiveness: - The measure of effectiveness of training programs is done in following ways:

Overall improvement of individual. Fulfillment of firm's goals. Knowledge Enrichment. Enhancement in Employee Satisfaction Index. Feedback obtained from the employees.

Chapter 6

Research Methodology

Research in common parlance refers to the search for knowledge. It can be also defined as a scientific and systematic search for pertinent information on specific topic. Infect, search is an art of scientific investigation. In simple terms, research means, 'a careful investigation or enquiry especially through search for new facts in any branch of knowledge.'

Logical Flow of Research is as follows

Identification of problem

↓

Research Objective

↓

Sources of Data

↓

Data Collection

↓

Sample

↓

Sample Size

↓

Data Interpretation

↓

Data Analysis

↓

Finding and Observation

↓

Conclusion

↓

Recommendation
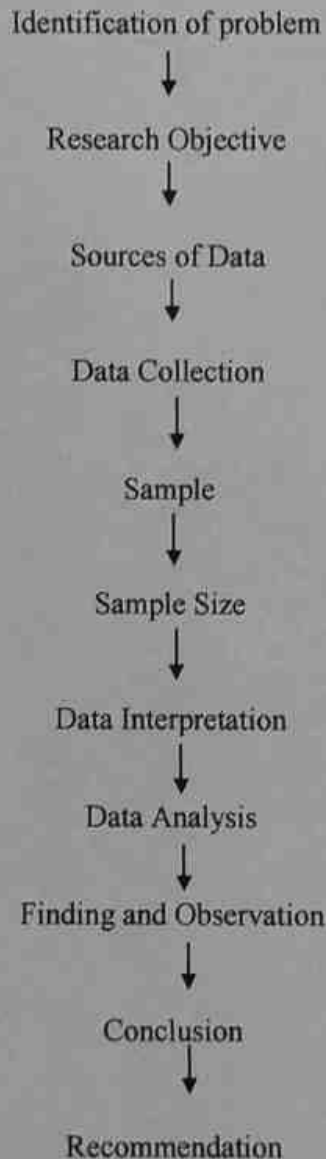
Research Design

Research design can be thought of as the structure of research. It is the glue that holds all the elements in a research project together. Research design is a vital part of the research study. It is the logical and systematic planning and directing of piece of research. It is the master plan and blue print of the entire study.

Sources of Data: - The sources of the data are as follows:

i. Primary Data: -
- Internal data about working of HR department gathered from organization.
- Interview.
- Observation.
- Sufficient data collected through feedback forms by the employees.

ii. Secondary Data: -
- Magazines, journals, brochures, etc.
- Website of the company.
- Books.
- Earlier researches on similar topic.

Samples: - we always have to work with a sample of subjects rather than the full population. But people are interested in the population, not the sample. To generalize from the sample to the population, the sample has to be representative of the population. The safest way to ensure that it is the representative is to use a random selection procedure.

Method of sampling used: "Random sampling method":

In the random sampling method, all items have some chance of selection that can be calculated. Random sampling technique ensures that bias is not introduced regarding who is included in the survey.

Sample Size: The sample size taken is 20 employees from the Human Resource Development of Indorama synthetics (India) ltd. Butibori.

Data Collection:

Survey- questionnaire: - Behaviors, beliefs and observations of specific groups are identified, reported and interpreted.

Chapter 7
Learnings During Sip

Selection of the Project: I am a student of BBA 3rd year and have taken Human Resource Development as my specialization subject.

While doing Summer Internship in Indorama I studied the HR activities and functions carried out in Indorama during SIP training and development came up as a topic of interest while it is not easy to understand all the parameters it is still required by all the Organizations.

Training is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or changing of attitudes and behaviors to enhance the performance of employees.

The Project Focus On: - How training and development is an antecedent of job involvement and what should company do to make the company to improve employee's performance.

Lessons Learn During SIP: -

1. Selection of the Company for Sip should be done carefully.
2. Team work is very important for HR manager.
3. Networking and Communication skills need to be very good.
4. Need to know Excel Sheet for office work.
5. How the training and development of employees done in Industries.
6. Safety measure should be taken into consideration during training.
7. Time motion study plays a key role in the process of training.

Chapter 8

Conclusions

On the basis of the analysis made, the following conclusions are drawn:

1. Maximum number of the employees finds healthy environment at the work place.
2. Lack of interest in employees act as a barrier in training programs.
3. Maximum employees said that they get help whenever they require.
4. Employees are satisfied with the training and development programs given to them.
5. The training programs has helped in developing skills of the employees.
6. After attending the training program most of the workers find their attitude better towards the job.
7. Most of the employees wants to the workplace to be redesigned where the training session are been conducted.
8. Employees felt the time wastage during training session. But trainees were satisfied with activities conducted during training program because it was related to their job.

Chapter 9

Recommendation

Recommendations and Suggestions:

1. Some advanced training is required in technology department.
2. The company should adopt some other ways for nominating the trainees like training need identification survey, self-nomination, personal analysis, organizational analysis, etc.
3. Training should be a continuous process i.e., it should be imparted at regular intervals.
4. The duration of training program should be less and details should be precise and accurate.
5. HR department should conduct seminars on some vital topics so that employees are always motivated and encouraged to work.

Chapter 10

Bibliograph

Books Referred:

* Personnel and Human Resource Management by P. Subba Rao.
* Personnel Management by C. B. Memoria.
* Human Resource and Personnel Management by K. Aswathappa.
* Human Resource Management by Anjali Ghanekar.
* Human Resource Management by T. N. Chhabra.

Websites:

* www.goggle.com
* www.wikipedia.org
* www.irsl.com

Chapter 11

Annexure
Indorama Synthetic (India) Ltd. Butibori

Questionnaire:

Personal Details:

Name:

Age:

Gender: Male   Female

1. Your organization considers training as a part of organizational strategy. Do You agree with this statement?

   Strongly agree

   Agree

   Disagree

   Somewhat agree

2. To whom is training given more in your organization?

   New staff

   Junior staff

   Senior staff

   Based on requirement

3. What are the barriers to training and development in your organization?

   Time

   Lack of interest

   Money

   Non availability of skilled trainer

4. What mode of training is normally used in your organization?

   Job relation

   Conference/ Discussion

   External training

   Programed instruction

5. "Training and Development session in your firm are useful." Do you agree with this statement?

   Strongly agree

Agree ☐

Disagree ☐

Somewhat agree ☐

6. How long does it take to implement the trained process?

Less than one month ☐

1-2 months ☐

2-4 months ☐

More than 4 months ☐

7. How well the work place of training is organized?

Excellent ☐

Good ☐

Bad ☐

Average ☐

8. What are the conditions that have to be improved during training?

Re organize the job ☐

Remove interference ☐

Re organize the work- place ☐

Upgrade the information of material given during training ☐

9. What are the general complaints about training session?

Take away precious time of workers ☐

Too many gaps between the sessions ☐

Training session are unplanned ☐

Boring and not useful ☐

A PROJECT REPORT

ON

"MARKETING STRATEGIES FOLLOWED BY INDIAN OIL CORPORATION"

SUBMITTED IN PARTIAL FULFILLMENT OF REQUIREMENT OF

BACHELORS OF BUSINESS ADMINISTRATION (BBA-H)

(2018 – 2021)

SUBMITTED BY   :   RAMESH RANA

REG – NO.   :   KU01818103001056

ROLL – NO.   :   1031801126007029

BIDHAN CHANDRA COLLEGE ASANSOL

Affiliated by -

KAZI NAZRUL UNIVERSITY ASANSOL

ACKNOWLEDGEMENT

3

ABSTRACT

Indian Oil Corporation Ltd (IOCL) is a premier public sector company in the Oil & Gas sector and is engaged in the business of refining and retailing of petroleum products including LPG in the country. It is the leading Indian corporate in the Fortune "Global 500' listing. IOCL is having about 129 POL Depot/Terminals, 91 LPG Bottling Plants which serve every nook and corner of the country. Indane (the trade name of LPG of IOCL) is supplied to the consumers through a network of about 5,456 distributors (51.8% of the industry).The growth in demand of LPG for domestic purpose is increasing at a rapid pace. To improve safety standards in Petroleum Industry, Ministry constituted OISD which establishes standards/practices to be followed in petroleum sector from time to time. The growth in demand of LPG for domestic purpose is increasing at a rapid pace everywhere in the country. In order to overcome increasing LPG demand, a bottling plant is very much necessary to be established to cater LPG to the customers and ensure that there would not be a shortfall in supplies and customers will not suffer for LPG refills on any account. To cope-up with the increasing demand of Liquefied Petroleum Gas (LPG) in future due to increase in its domestic use, Public Sector Oil Companies are setting up new bottling plants as well as augmenting their existing capacities. Indian Oil Corporation Ltd (IOCL) currently has 89 bottling plants in the country to do such bottling

PREFACE

The primary objective of this report is to provide the insight into the core of **"RECRUITMENT POLICIES FOLLOWED BY INDIAN OIL CORPORATION"** and an understanding and Importance of **INDIAN OIL INDUSTRY.**

We hope that the report has made the text interesting and lucid. In writing this report, we have benefited immensely by referring to many publications and articles. We express my gratitude to all such authors and publishers.

Any suggestions to improve this report in contents or in style are always welcome and will be appreciated and acknowledged.

DECLARATION

I **RAMEEZ RAJA** hereby declare that the report titled **"RECRUITMENT POLICIES FOLLOWED BY INDIAN OIL CORPORATION"** is prepared and completed by me under the supervision and guidance of **SYED MD. FAISAL HAMMAD** at BIDHAN CHANDRA COLLEGE, ASANSOL affiliated to KAZI NAZRUL UNIVERSITY in the partial fulfilment for the degree of Bachelor of Business Administration BBA (H).

It is my masterpiece and has not been submitted by me before the awards of any other degree. To the best of my knowledge, I didn't breach any copyright act intentionally. I would be very happy to provide you with any clarification regarding the report.

(RAMEEZ RAJA)

INDEX

1. INTRODUCTION

THEORETICAL CONCEPTS:

> ➢ **RECRUITMENT**: Before an organization can fill a job vacancy, it must find people who not only are qualified for the position but also who wants a job. Recruitment refers to organizational activities that influence the number and type of applicants who apply for a job and whether the applicants accept the jobs if offered. Thus recruitment is directly related to both human resource planning and selection.

Although it can be quite expensive organization have not always viewed recruitment as systematically as other HR functions such as selection.

During the coming years, however the importance of recruitment will increase for many organizations' for at least two reasons:

- A majority of companies think that they will face shortage of employees who possess the necessary skills for the jobs.
- The downsizing and costs saving measures undertaken by many companies in recent years have left recruitment budgets much smaller than before.

Thus recruiters will have to become acquainted with new and more cost effective ways of attracting qualified applicants. We are here to give a presentation on recruitment policies followed by Indian Oil Corporation Limited, which is an Indian state owned oil and gas company headquartered in New Delhi. It is the largest commercial enterprise in the country, with a net profit of INR 19,106 crore for the financial year 2016-17. In the year 2017, the company had 33,135 employees, out of which 2735 were women. They recruit people from the age 18years to 26years. Hence, Indian Oil Corporation Limited(IOCL) is the Energy of India.

2. OBJECTIVES OF RECRUITMENT

Various factors in the environment affects the recruitment process. The recruitment process begins with an attempt to find employee with the abilities and attitudes desired by the organization and to match them with the tasks to be performed. Whether potential employee will respond to the recruiting efforts will depend on the attitudes they have developed towards those tasks and the organization on the basis of their past social and working experiences. Their perception of the task will also be affected by the work climate in the organization. The recruitment process depends on factors like external and inte rnal influences. Some important objectives are as follows:

- To serve the national interests in oil and related sectors in accordance and consistent with Government policies.

- To ensure maintenance of continuous and smooth supply of petroleum products by way of crude oil refining, transportation and marketing activities and to provide appropriate assistance to consumers to conserve and use petroleum products efficiently.

- To enhance the country's self-sufficiency in crude oil refining and build expertise in laying of crude oil and petroleum product pipelines.

- To minimize fuel consumption and hydrocarbon loss in refineries and stock loss in marketing operations to effect energy conservation.

- To earn a reasonable rate of return on investment.

- To optimize utilization of refining capacity and maximize distillate yield and gross refining margin.

OBJECTIVES OF THE STUDY PAPER

- To identify the various factors companies, undertake prior to the recruitment process.
- To study how the companies, establish a fit between their business strategy and recruitment strategy.

3. COMPANY PROFILE OF INDIAN OIL CORPORATION LIMITED

Indian Oil, the largest commercial enterprise of India (by sales turnover), found in the year 1964; in New Delhi, is the only Indian company to find a place in Fortune's "Global 500" of the world's largest industries (Rank 278 in 1998). Among Petroleum Refining companies, it has a global ranking of 16 by sales and profits. It is ranked 1st in Fortune India 500 list for the year 2016 and 168th in Fortune's "Global 500" list of the world's largest companies in the year 2017.

Indian Oil touches every Indian's heart by keeping the vital oil supply line operating relentlessly in every nook and corner of India. With the backing of over 32% of the country's refining capacity (as of 1st April 2000) and 6260 kms of crude/product pipelines across the length and breadth of the country, India Oil's vast distribution network ensures that essential petroleum products reach the customer at the "right place and right time and right time". Indian Oil's refineries and pipelines have been consistently achieving more than 100% capacity utilization and our marketing share is about 55% in India. India Oil's activities are backed by its "Research and Development Centre", the first such center established in India. This center has over the years grown into a major technological development center of international repute. Indian Oil also has four overseas offices in Kuwait, Malaysia, Dubai, and Mauritius.

As the premier National Oil Company, our endeavor is to serve the national economy and the people of India. They also have a "vision beyond tomorrow" - of becoming an integrated and diversified "Global Energy Corporation". They are continuously innovating and strengthening areas of core competence. At the same time, they are exploiting opportunities offered in the new liberalized scenario by globalizing and diversifying into related areas. As of 31st March, 2017 Indian Oil's employee strength is 33,135 out of which 16,545 are in the officer cadre.

BUSINESS RESPONSIBILITY REPORT

➢ General Information about the company:

Corporate Identity Number(CIN)	L23201MH1959GOI011388
Name of the company	Indian Oil Corporation Limited
Industry Type	Oil and Gas
Founded	1964; 54 years ago in New Delhi
Chairman	Sanjiv Singh
Registered Address	Indian Oil Corporation Limited, Indian Oil Bhavan, G-9, Ali Yavar Jung Marg, Bandra(East), Mumbai-400051
Corporate Office	New Delhi
Area served	India, Sri Lanka, Middle East, Mauritius

➢ Financial Details of the company:

Paid Up Capital(INR)	4,855.90 crores(as on 31.03.2017)
Total Turnover(INR)	4,38,709.96 crores(2016-2017)
Revenue(INR)	364,081.74 crores(2017)
Operating Income(INR)	26,321.24 crores(2017)
Net Income(INR)	19,106.4 crores(2017)
Total Assets(INR)	150,113.52 crores

FINANCIAL REPORT OF IOCL

	AS PER IND-AS				AS PER PREVIOUS IGAAP			
	2016-17	2015-16	2016-17	2015-16	2015-16	2014-15	2013-14	2012-13
	-----(US $ Million)-----		-----------------------------(₹ i n Crore)----------------------- ------------------					
Financial								
Turnover	65391	60969	438710	399105	399601	450756	457571	414919
Profit Before Exceptional Items, Finance Cost, Tax, Depreciation &Amortization (EBITDA)	5364	3570	35989	23371	22329	14291	19023	17284
Profit Before Exceptional Items, Finance Cost & Tax (EBIT)	4437	2834	29766	18552	17476	9762	13263	12083
Profit Before Exceptional Items & Tax	3923	2362	26321	15462	14476	6327	8179	5648
Profit Before Tax	3923	2570	26321	16826	15840	7995	9926	5648
Profit After Tax	2848	1717	19106	11242	10399	5273	7019	5005
Other Comprehensive Income	726	(1060)	4868	(6940)				
Total Comprehensive Income	3573	657	23974	4302				
Contribution to Central & State Exchequer Cumulative Dividend (on issued share capital)	26683	20175	179014 39940	132064 30714	132064 30714	98326 27315	86164 25713	79819 23601

OPERATIONAL REPORT OF IOCL

		2016-2017	2015-2016	2014-2015	2013-2014
Operating Performance					
Product sales					
Domestic Petroleum Products	Million Tones	74.110	72.603	68.467	67.617
Gas	Million Tones	1.920	1.929	1.805	1.830
Petrochemicals	Million Tones	2.453	2.413	2.390	1.991
Explosives	Million Tones	0.158	0.144	0.100	0.085
Total Domestic	Million Tones	78.641	77.089	72.672	71.147
Export	Million Tones	4.849	3.575	3.749	4.384
Total	Million Tones	83.490	80.664	76.511	75.531
Refineries Throughput	Million Tones	65.191	56.694	53.126	53.126
Pipelines Throughput	Million Tones	82.490	79.824	75.684	73.069

DIAGNOSTIC MODEL

EXTERNAL ENVIRONMENTAL INFLUENCES	INTERNAL ENVIRONMENTAL INFLUENCES
☐ Government Regulations & Laws ☐ The Union ☐ Economic Conditions ☐ Composition of Labor Force	☐ Strategy ☐ Goals ☐ Organizational Culture ☐ Work Group ☐ Leader's Style & Experience

HUMAN RESOURCE PROCESSES

ACQUIRING HUMAN RESOURCES	REWARDING HUMAN RESOURCES	DEVELOPING HUMAN RESOURCES	PROTECTING & EVALUATING
☐ HR Planning ☐ Job Analysis & Design ☐ Recruitment & Selection	☐ Performance Evaluation ☐ Compensation ☐ Benefits & Services	☐ Orientation & Training ☐ Development ☐ Career Planning	☐ Safety Health & Wellness ☐ Evaluation

DESIRABLE END RESULTS

Socially Responsible & High Ethical	Competitive, High Quality Products	Competitive, Quality Services

A diagnostic model is a framework for identifying, analyzing and interpreting data in a given context to identify possible needs. The recruitment process begins with an attempt to find employee with the abilities and attitudes desired by the organization and to match them with the tasks to be performed.

15

## STATEMENT FOR PROFIT AND LOSS FOR THE YEAR ENDED ON MARCH 31, 2017:

PARTICULARS	NOTE NO.	MAR-2017(in crore)	MAR-2016(in crore)
1. Revenue From Operations	23	445,372.91	406,872.99
2. Other Income	24	4,208.58	2,322.16
3. Total Income (1+2)		449,581.49	409,150.15
4. Expenses: • Cost of the materials consumed	25	156,910.25	142,265.53
• Purchases of stock-intrade			
• Changes in Inventories.		141,925.49	143,628.81
• Employee Benefits Expense	26	15,259.80	3,479.20
• Finance Costs	27	9,657.89	7,114.02
• Depreciation a) Tangible assets b) Intangible assets			
• Excise Duty	28	3,445.43	3,089.89
• Other Expenses			
		6,161.81	4,769.58
		61.16	48.99
Total Expenses(4)		6,222.97	4,818.57
		85,499.75	59,651.56
		34,858.27	29,640.28
	29		
		423,260.25	393,687.86
5. Profit Before Exceptional Items and Tax(3-4)		26,321.24	15,462.29
6. Exceptional Items		-	1,364.25
7. Profit Before Tax		26,321.24	16,826.54
8. Tax Expenses		7,460.29 245.45	3,747.89 1,836.42
9. Profit For The Year(78)		19,106.40	11,242.23
10. Other Comprehensive Income:	30	4,537.97 181.18 247.75 99.41	7,140.98 224.88 36.78 12.72

16

11. Total Comprehensive Income For The Year(9+10)	31	23,973.89	4,302.07
12. Earnings per Equity share(Rs)	32	40.31	23.72

VISION

Indian Oil's vision with values encompasses the corporation's new aspirations to broaden your Horizons to expand across new vistas and to Infuse new age dynamism among its employees. Adopted in the company's golden jubilee year (2009) as a shared vision of Indian Oil people and other stakeholders it is a matrix of 6 cornerstones that put together facilities the Corporation's endeavor's to be the energy of India and to become a globally admired company.

More importantly, the vision is infused with the core values of care, innovation, passion and trust, which embody the collective conscience of the company and its people and have helped it to grow and achieve new heights of success year after year.
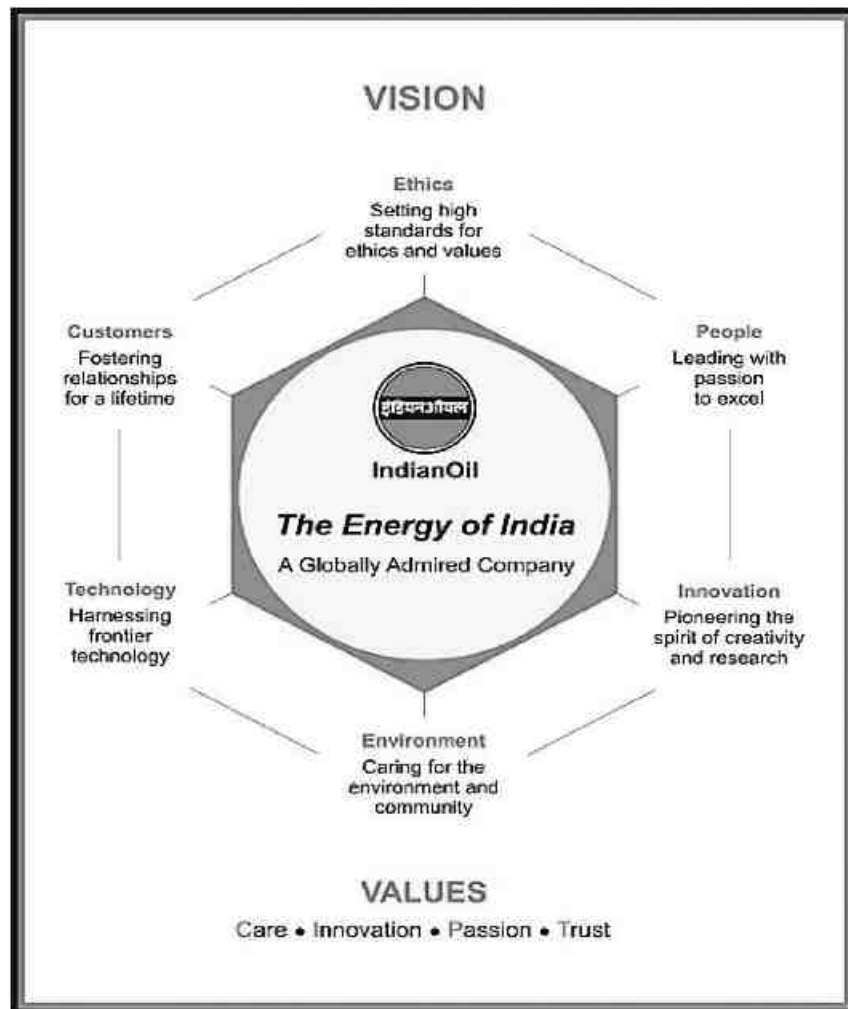
MISSION

- To achieve international standards of excellence in all aspects of energy and diversity business with focus on customer's delight value of products and services cost reduction.
- To maximize creation of wealth value and satisfaction for the shareholders.
- To attain leadership and developing adapting and assimilating state of the art Technology for competitive advantage.
- To provide Technology and services through sustained research and development.

INDIAN OIL CORPORATION COMPANY ANALYSIS:

Indian Oil Corporation

Pie chart segments:
- 9.02%
- 0.20%
- 1.70%
- 53.08%

Legend:
- Govt. Of India
- Mutual Funds
- Bank/FI
- Insurances
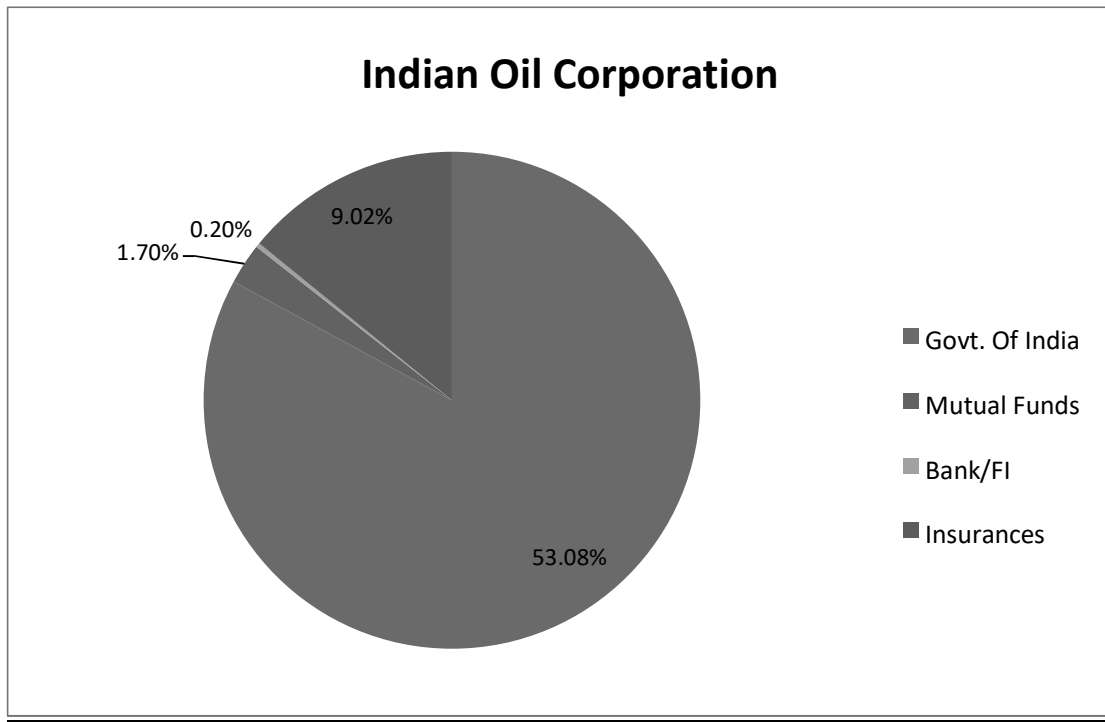
PRODUCT AND SERVICES:

Indian oil accounts for nearly half of India's petroleum market share, 35% national refining capacity, 11% downstream sector pipelines and through capacity. The Indian oil group owns and operates 11 of India's 23 refineries with a combined refining capacity of 80.1 MMTPA (million metric tons per annum). Indian oils cross country pipeline network, for transportation of crude oil to refineries and finished products to high demand centers, spans over 13,000 km. the company has throughput capacity of 80.9 MMTPA for crude oil and petroleum products and 9.5 MMSCMD for gas. On 19th November 2017 IOC, in

collaboration with Ola, launched India's first electric charging station at one of its petrol-diesel stations in Nagpur. Indian governments' National Electric Mobility Mission Plan launched in 2013 aims at gradually ensuring a vehicle population of 6 to 7 million electric and hybrid vehicles in India by 2020.

PRODUCTS AND SERVICES ANALYSIS:

Price regulated	Deregulated
Liquefied Petroleum Gas(LPG)	Fuel and Feedstock
Motor Spint (Gasoline)	Lubes and Greases
Aviation Turbine Fuel(Jet kero)	Petrochemicals and Specialties
Superior Kerosene Oil(Kero)	
High Speed Diesel(Gas Oil)	

PRODUCT PRICES:

PETROL:

METROS	PRICES
Delhi	74.08
Kolkata	76.78
Mumbai	81.93
Chennai	76.85

DIESEL:

METROS	PRICES
Delhi	65.31
Kolkata	68.01
Mumbai	69.54
Chennai	68.90

KEROSENE:

METROS	PRICES
Delhi	Declared as kerosene free city
Kolkata	24.51
Mumbai	26.31
Chennai	28.21

INDANE:

METROS	PRICES
Delhi	491.35
Kolkata	494.33
Mumbai	489.04
Chennai	479.44

LOCATIONS OF IOCL REFINERY AT VARIOUS CITIES

IOCL REFINERY, MATHURA
Indian Oil Corporation Limited, Mathura Refinery, Mathura
IOCL Mathura Non Executive Results

Vadodara

IOCL Haldia Recruitment

Indian Oil Corporation

4.RESEARCH METHODOLOGY

RESEARCH OBJECTIVE UNDERTAKEN: To study the Recruitment and selection practices at IOCL.
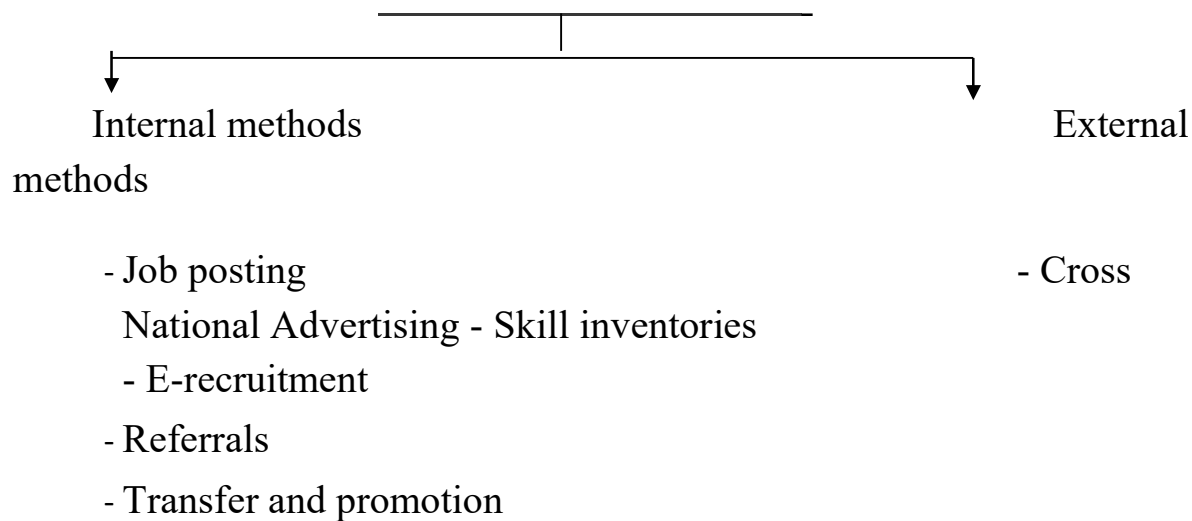
SOURCES OF DATA COLLECTION:

Secondary sources: Data was screened from secondary sources for further inputs. Also data was obtained from various journals in order to supplement details of recruitment trends globally and locally.

Recruitment of IOCL Employees:

Code	Trade	Qualification	Reservation of seats			
			Gen	SC	ST	OBC
101	Trade Apprentice/Attendant operator	3years full time BSc	20	09	0	11
102	Technician Apprentice	Matric with 2years	08	03	0	04
103	Trade Apprentice	3years full time BSc	05	02	0	03
104	Technician Apprentice- Chemical	3years Diploma in Chemical Engineering	20	08	0	12
105	Technician Apprentice- Mechanical	3yeras full time Diploma in Mechanical Engineering	08	03	0	04

106	Technician Apprentice- Electrical	3years full time Diploma in Electrical Engineering	10	04	01	05
107	Technical Apprentice- Instrumentation	3years full time Diploma in Instrumentation	05	02	0	03

5. RECRUITMENT METHODS

Internal methods   External methods

- Job posting   - Cross
  National Advertising - Skill inventories
  - E-recruitment
- Referrals
- Transfer and promotion

The methods of recruitment open to a business are often categorized into: Internal recruitment is when the business looks to fill the vacancy from within its existing workforce. External recruitment is when the business looks to fill the vacancy from any suitable applicant outside the business.

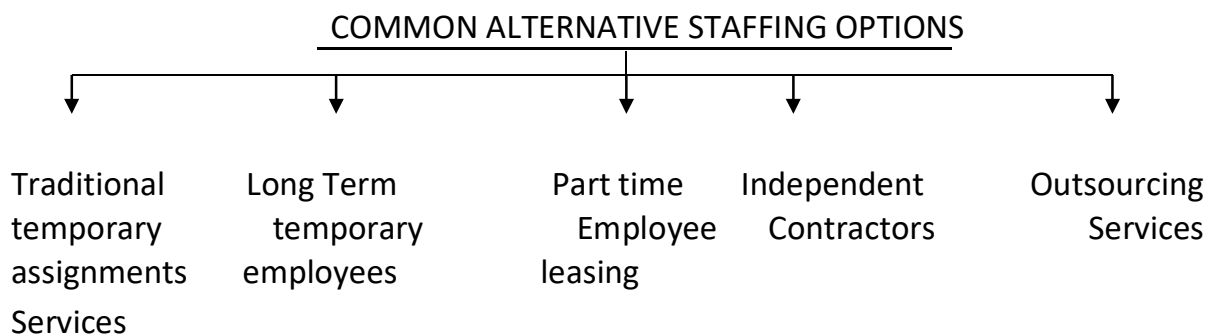## EVALUATING THE RECRUITMENT METHODS:

One of the most important reasons to evaluate recruiting method is to determine the cost versus benefits of various methods. When recruiting method do not attract enough applicants many organization's respond by raising the salaries. Recruiting costs include factors such as the cost of advertising, the salaries and travel expenses of recruiters, travel expenses of potential job applicants and recruiting agencies. The effectiveness of recruiting method varies among organizations and even jobs within the same organization.
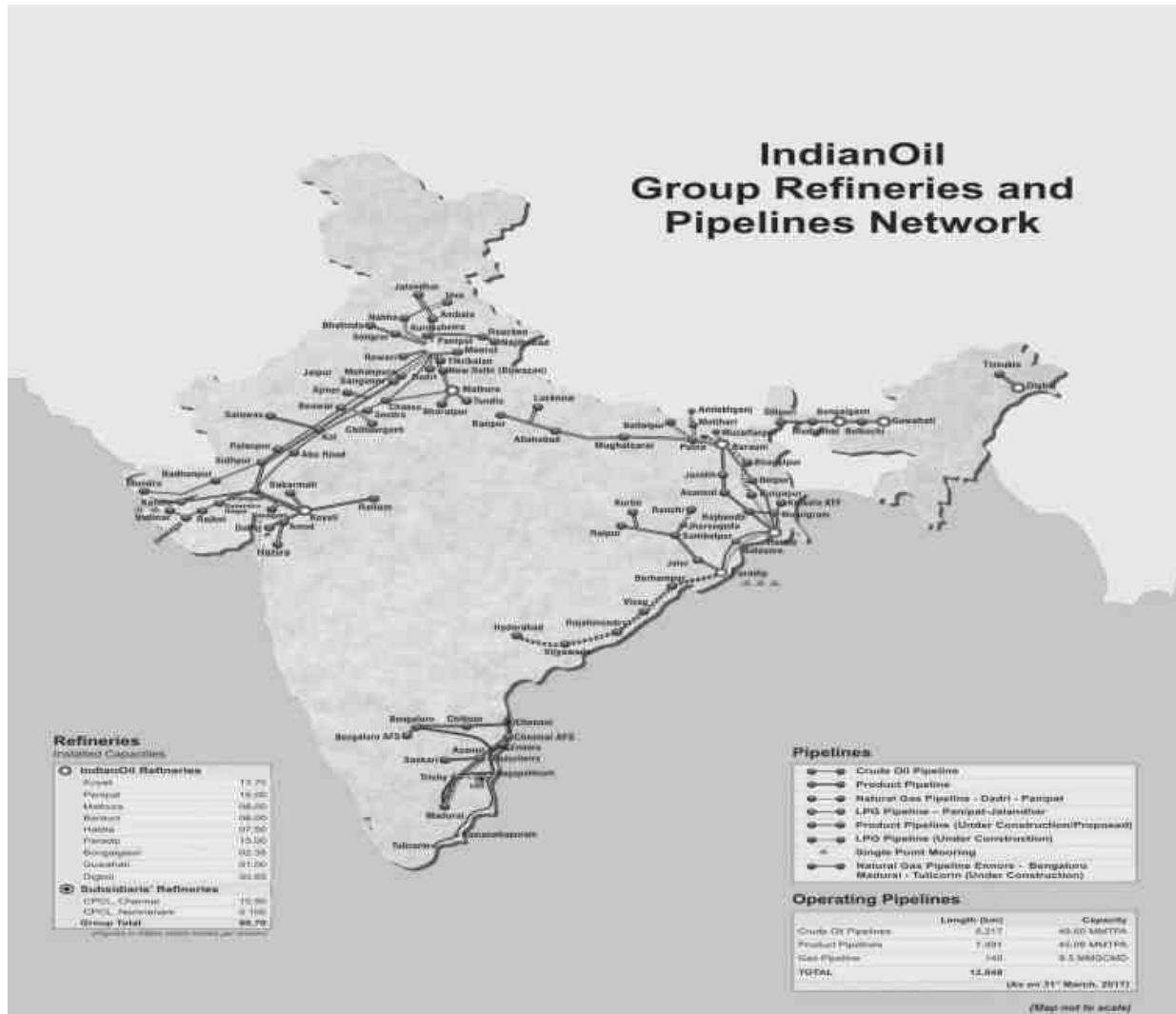
UTILIZING RECRUITING RESOURCES:

Companies frequently use a variety of internal and external recruiting strategies to locate and hire their workers. Although one technique may work well for some organizations, the same technique may prove ineffective for others. Some technique may mesh well with the organization's competitive strategy. By interpreting both internal and external recruiting techniques, a company can develop overall recruiting plan i.e. specifically tailored to support its overall strategy and result in selection of highly qualified applicants. A yield ratio can be developed for each position to be filled. A yield ratio is the number of candidates who pass a particular recruitment hurdle divided by the number who attempted the hurdle. It is important to keep in mind that the plan should support the company's overall strategic approach.

ALTERNATIVES TO RECRUITMENT:

Another strategic business decision can be made is not to recruit. Instead they can rely on alternative staffing options.

COMMON ALTERNATIVE STAFFING OPTIONS

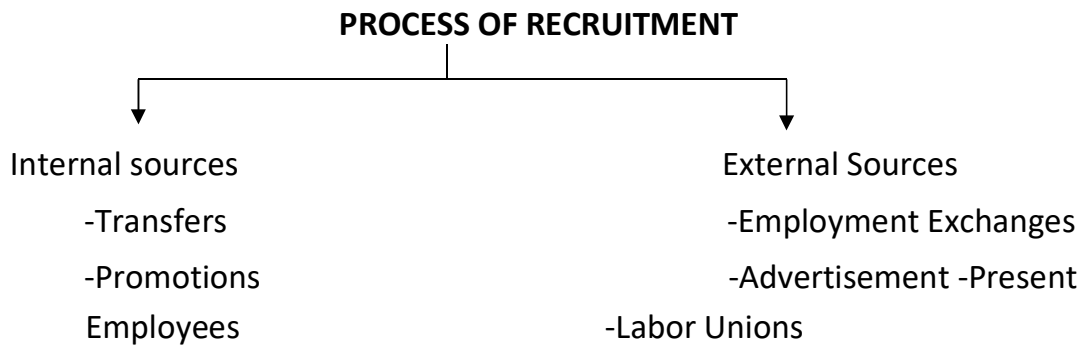| Traditional temporary assignments Services | Long Term temporary employees | Part time Employee leasing | Independent Contractors | Outsourcing Services |

INDIAN OIL GROUP REFINERIES AND PIPELINES MAP:

<u>RECRUITMENT PROCESS - INTERNAL AND EXTERNAL</u>

IOCL follows both internal and external recruitment processes for managerial and nonmanagerial level procedure of recruitment.

PROCESS OF RECRUITMENT

Internal sources   External Sources

    -Transfers   -Employment Exchanges

    -Promotions   -Advertisement -Present

    Employees   -Labor Unions

IOCL indulges in internal hiring for the staff and the managerial levels. Import cases promotion on basis of performance is a common factor. In fact, in the managerial level the merit is the only basis of internal recruitment. In case of the non-managerial level it may be promotion or if the employee has added some qualification to his skill set. The internal hiring definitely is dependent upon the next level vacancy. As per employee moves higher up the ladder the recruitment at the senior level becomes strictly merit based. Hence the promotions are tougher. Also the success of succession planning is more relevant for the senior people.

A SUITABLE RECRUITMENT STRATEGY

An effective recruitment system like any other HR sub-system needs to be sync with the business strategy and objectives of the organization. Organization's adopt specific recruiting strategies tailored to their business needs. These business needs may change depending on the stage of growth of the organization.

RECRUITMENT STRATEGY VARIED WITH STAGE OF GROWTH OF THE ORGANIZATION (IOCL)

Business Situation	Characteristics of business situation	Characteristics of candidate
Starting a new business	Financial risk No systems Operational experience base is lacking	Vision Staffing
Turnaround	Need for rapid decision making Low morale Weak competitive position	Strong leader Business strategies Management skills
New acquisitions	Incompetent personnel Low morale	Strong leader Credibility
Liquidity of business	Low returns Low morale	Determination Wants to be respected
Redeployment	Long term risks Resistance to change	Supportive Risk Taker

VARIOUS ACTIVITIES UNDERTAKEN FOR CONDUCTING RECRUITMENT EXERCISES AT IOCL

➢ **RELEASE OF ADVERTISEMENTS:**

- Preparation of draft advertisements.

- Handling over the advertisement material to the agency.

- Publication of advertisement in selective newspapers throughout India as well as the employment news through the advertising agency.

➢ **RECRUITMENT THROUGH GATE EXAMINATION**:

After 2010, IOCL stopped conducting their own exams and started considering GATE scores.

Selection procedure through GATE as of 2018 is as follows:

- Candidates are required to appear in GATE 2018 in the respective discipline.

- Candidates are selected based on valid GATE 2018 scores for appearing in GD/GT and Interview.

- Shortlisted candidates are required to participate in Group Discussion (GD), Group Task (GT) and Personal Interview (PI) for assessment of different facets of knowledge, skill, attitude and aptitude in case and thus the recruitment will be done.

- The final merit will be prepared discipline-wise. In order to be considered for the merit list, the candidates are required to secure minimum 40% marks in GD/GT and PI.

➢ **DESPATCH OF LETTERS FOR GD/GT AND INTERVIEW:**

- Handling of craft letter for printing by the agencies.

- Dispatch of call letters to candidates for GD/GT and interviews in four Metro cities - Delhi, Mumbai, Chennai, Kolkata.

➢ **CONDUCTING OF GD/GT AND INTERVIEW**:

- Simultaneous conducting of GD/GT and interview in 4 Metro cities.

- The certificate and other documents of the candidate are verified on the specified interview date at the venue itself.

- Declaration forms duly filled in by the candidates along with copies of relevant documents are made over to the selection committee members before interview.

- Candidates appearing in GD/GT and interview are reimbursed rail are limited to first class or second tier AC by the shortest route at the venue on production of documentary proof thereof.

General category candidates have to execute a bond of Rs.3,00,000, while SC/ST/OBC & PWD candidates must execute a bond of Rs.50000 to serve IOCL for a minimum period of 3 years from the date of their joining.

- **PAY SCALE**: The Cost to Company (CTC) is Rs.12 Lakh per annum, which is inclusive of performance related pay (PRP).

ORGANISATIONAL AND ENVIRONMENTAL FACTORS AFFECTING RECRUITMENT

Factors like organizational image to not affect the recruitment process a great deal because the company has a limited budget allotted for the recruitment process.

Relations with labor unions have little effect on the recruitment process. The cost associated with recruitment is a very important factor. The budgets allotted at the beginning of the recruitment process as an in-depth evaluation of the financial situation of the company. Hands in case of recruitment through advertisements the cost incurred is very high.

Government deciding on quotas for SC/ST/OBC definitely affects the manpower planning and hence the quality of people being recruited.

6.MANPOWER PLANNING AND BUSINESS PLANS FOLLOWED BY IOCL

Indian oil corporation limited follows a detailed manpower planning process. However, this planning or the recruitment for any positions has to be sanctioned by the top management. It does not follow a system of projections for the 5 years since they believe that it is too long a period considering the fast changing environment. As a result, it does not allow them to keep a focused approach eventually affecting the recruitment quality and process. The projections are drawn for 2 years. In fact, the projections actually where a detailed plan is drawn up, a budget is made and/or sanction obtained for the same. Also the requirements are identified for the next year which then in the coming here is drawn in detail. Hence the blueprint for the next year is prepared. The budget is prepared extensively, which holds an important process in the entire function. The data from all centers all over the country

and regions are taken. The data is can assessed in terms of the type of people needed, how many of each is needed, the qualifications and the number of years of experience needed. How many employees are expected to retired that year, how many are expecting to resign. What is the debt levels, the financial and market situation of the company is judged?

Following which the board sanctions the manpower plan and the recruitment process begins. This also allows IOCL to tailor its manpower plans to its corporate objectives since the profiles of each are drawn up in consultations with the line management, top management (depending whether managerial on non-managerial) and the experience of the past years. The linkage developed as a consequence of the above are strong between the main power plants and the business plans. It helps to assess the number of employees redundant. Considering the competitive scenario, it is imperative for the company to keep a tab on its requirements and invest in the making of its manpower plans. The result is evident in the success of IOCL, the fact that it leads the market proves it.

The company has a well laid out succession plan which forms an essential backbone of the company. This ensures that any person leaving the organization at a middle or senior level, the work does not come to a stop. A well-defined succession planning ensures a lot more than this. This instills a feeling of security amongst the employees at the lower level the relevance of merit and performance becomes accentuated and helps them perform better.

MANPOWER REPORT OF IOCL

Numbers	2016-2017	2015-2016	2014=2015	2013-2014
	33,135	32,803	32,962	33,793

MANPOWER

■ MANPOWER

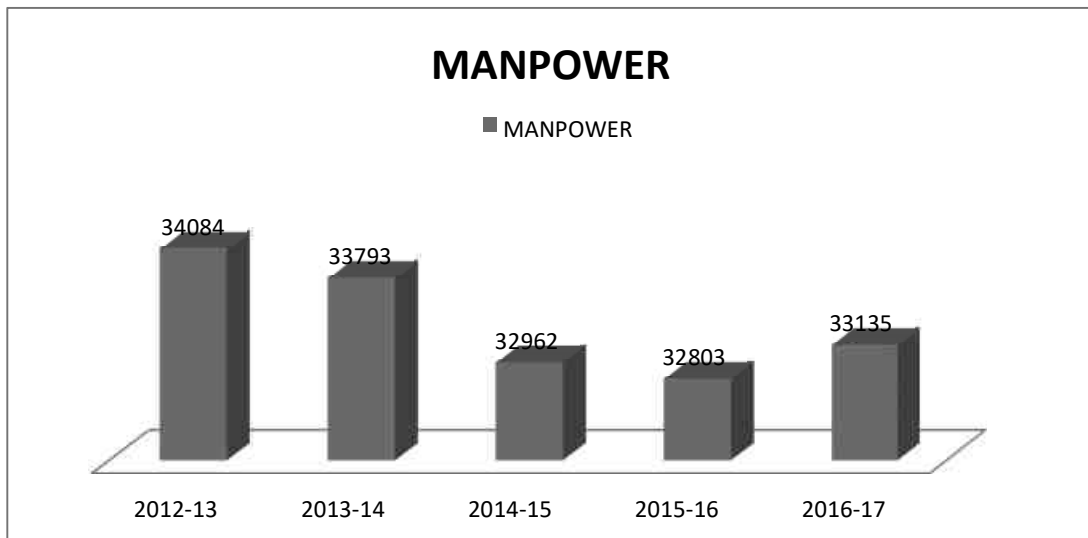| 34084 | 33793 | 32962 | 32803 | 33135 |
| 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |

FIG. SHOWING MANPOWER STRENGTH OF IOCL IN THE LAST 5 YEARS

7.CAREER GROWTH OPPORTUNITIES OF IOCL

Indian oil in tax officers at the junior most level of the management hierarchy. First division professional degree holders and post graduate from relevant disciplines are recruited as management engineer trainees, accounts officers, medical officers, lab officers, system officers, communication officers, scientist etc.

Job rotation and inter location transfers throughout the country facilitates planned development of careers and broaden outlook. Career growth opportunities are based on the individual's performance and contribution to the common goal of sustained growth Indian Oil's top executives have grown from within, a testimony to the unlimited opportunities of growth available to the meritorious.

IOCL Jobs & Recruitments

8. WELFARE OF EMPLOYEES OF IOCL

Apart from attractive skills and perks Indian Oil provides its employees many facilities and welfare measures which are continuously upgraded.

The medical facilities extended to the employees are rated amongst the best in the country. This includes: Entrepreneurial Culture which means engine oil that encourages employee participation in management and suitably rewards innovative suggestions. Participative forums in the form of joint management Council, quality circles, suggestion scheme etc. And Training and Development, in which Indian Oil conducts structures training programs for its employees both in general management and functional management disciplines.

It also provides them opportunities to avail membership of professional bodies.

Monetary incentives are also available for those acquiring additional qualification.

9. SELECTION METHODOLOGY

1. Selection shall be on the basis of performance of the candidates on the basis of marks obtained by them in the Written Test (Duration 90 Minutes) and meeting notified eligibility criteria.
2. The Written Test will comprise of 100 questions with Objective Type Multiple Choice Questions (MCQs) consisting of four option with one correct option. The questions would be in bilingual i.e. English & Hindi.
3. The written test will assess the candidates on the following parameters: -

TRADE APPRENTICE - ACCOUNTANT
• Generic Aptitude including Quantitative Aptitude – 30 Marks
• Reasoning Abilities – 30 Marks
• Basic English language Skills – 40 Marks

Trade Apprentice (Fitter / Electrician / Electronics Mechanic / Instrument Mechanic / Machinist) & Technician Apprentice (Mechanical / Electrical / Instrumentation / Civil / Electrical & Electronics / Electronics)

• Technical Acumen in relevant discipline – 40 Marks
• Generic Aptitude including Quantitative Aptitude – 20 Marks
• Reasoning Abilities – 20 Marks
• Basic English Language Skills – 20 Marks

Trade Apprentice (Data Entry Operator /Retail Sales Associate):
• Generic Aptitude – 30 Marks
• Reasoning Abilities – 30 Marks
• Basic English – 40 Marks

4. The candidates will have to secure a minimum of 40% marks in written test to qualify for selection process. The minimum qualifying marks shall be 35%

for candidates belonging to SC/ST/PwBD categories against reserved positions.

5. Candidates selected as apprentices will have to fulfill the minimum physical fitness standard/parameters as specified in the Apprentice Act and amendments/modification issued from time to time. Only those candidates declared fit in pre-engagement medical and physical fitness shall be considered for engaging as apprentice.

Document Verification:

Candidates shortlisted on the basis of their position in the merit list and subject to number of seats in respective Trades/Disciplines, shall be called for document verification. The following original documents along with a self-attested copy should be furnished at the time of Document Verification:

1. 10th Pass/Matriculation certificate issued by the concerned education board as proof of date of birth. No other document will be accepted for verification of date of birth.
2. SC/ST/OBC(NCL)/Disability/EWS-Income & Asset Certificate by reserved category candidates in the prescribed format issued by Competent Authority.
3. Class XII marksheet issued by the concerned education board/ Semester-wise/ year-wise mark sheets of ITI issued by NCVT or SCVT/Graduation/Diploma in Engineering
4. Class XII/Final ITI issued by NCVT or SCVT/Graduation/Diploma Certificate issued by respective Board/ Authority.
5. Conversion certificate from CGPA/OGPA/Letter Grade to percentage of marks, if applicable, from concerned University/Institute.
6. Certificate mentioning the date of publication of result from the Principal of the Polytechnic/ School/College/ Institute from where the candidate pursued his/her Class XII/ITI/Graduation/Diploma course, if applicable.
7. For Candidates applying against Discipline Code 13/26/39/52/65 or 131/261/391/521/651 -Skill certificate issued by an awarding body recognized under National Skill Qualifications Framework or any other authority

recognized by the Central Govt.

8. Any other Certificate, as specified.

Pre-Engagement Medical Fitness:

1. Candidates selected as apprentices will have to fulfil the minimum physical fitness standard/parameters as specified in the Apprentices Act and amendments/modifications issued from time to time.

2. Medical examination of PwBD candidates shall be with due consideration to the provisions of Rights of Persons with Disabilities Act, 2016.

10. SAFETY POLICY

Oil India Limited is guided by its Core purpose of "being a fastest growing energy company with global presence and providing value to all stake holders". Currently as an E&P company, OIL has a pan India presence with overseas foot prints. In alignment with the core purpose, OIL is fully committed to the safety of its Employees, Contractors and Recourses of the company. OIL strongly believes that the Safety Management System and its effective implementation are the integral part of its business & operation. In pursuance of the above, the objectives of OIL are:

01. Ensure Safe Work Place in all our operational areas.

02. Strive for "Zero Tolerance to Accidents and no harm to Man & Machine" with Pro-active Safety measures in place.

03. Demonstrate commitment to achieve Safety Excellence at workplace by adoption and promotion of best practices and technology.

04. Establish a strong Safety Culture by Consulting, Listening, Responding and Decisionmaking.

05. Comply with all Acts, Rules, Regulations and Applicable Standards / Codes, issued from time to time by statutory authorities besides our own policies & manuals relating to Safety.

06. Prevent Mishaps, Minimize Risk & Hazards and remain trained, equipped and ready for effective & prompt response to emergencies including disasters & accidents.

07. Continually improve Safety Performance by establishing clear and measurable objectives through systematic implementation plan and Reorganization / Reward system.

08. Promote Safety Awareness & Encourage knowledge up gradation amongst all the employee & contract personnel.

STEPS TAKEN BY MANAGEMENT:

01.Declare Company's 'SAFETY POLICY' in trilingual and distributed to all Installations.

02. Vocal, visible and continuous support of Safety Activities.

03. Appointment of Safety officer and Fire officer to carry out functions of " Safety & Fire Protection " in Pipeline Sphere.

04. Adoption of standard codes and practices, strict compliance & implementation of statutory regulations and Acts.

05. Safety matters are communicated effectively in Safety Meetings.

06. Fire and Safety training to employees.

07. Issue of personal Protective Equipments to all employees working in hazardous areas.

08. Annual Safety Audit conducted by Multidisciplinary team.

09. Continuous efforts to improve upon the "Safety Index".

10. Suggestions from employees are welcomed and implemented on the basis of merit.

11. Continuous efforts to make work conditions and environment safe and healthy.

12. Annual Safety Week is organised to motivate all employees.

SAFETY INSPECTION AND TRAINING:

01. All critical items of operating equipments such a Safety relief valve, overspeed trip, emergency alarms, automatic shutdown devices, fire/gas detector and alarms are periodically inspected and tested.

02. All Fire extinguishing system and Fire extinguishers, Fire Hydrants, Monitors, Hoses, Hose boxes etc. are periodically inspected and tested.

03. All personal Protective Equipments are maintained in good order.

04. Time to time workshops are conducted to ensure adequency of trained personnel for safe performance of a job.

05. Departmental employees are familiarised with fire/explosion hazards and are trained for fire / explosion emergencies.

39

06. Weekly fire drills are carried out.
07. First Aid training is imparted to employees.

CODE, STANDARDS, STATUTORY RULES, REGULATIONS AND OPERATIONAL MANUALS :
All applicable codes, standards and operational mannuals have been made available in Library and concerned departments for strict compliance.

TRAINING : Employees are regularly nominated for professional and safety training.

FIRST AID MEDICAL FACILITIES :
- Medical facilities are available at all the locations.

- First Aid Boxes are provided at all the Installations.

MEDICAL EXAMINATION : Inital / Periodical Medical Examination of all worker working in the Pipeline Department are carried out as per Factories Act.
HOUSE KEEPING AND CLEANLINESS : Good housekeeping is practised and encouraged. Provision of Dust bins and regular disposal of waste is must for cleanliness in the plant and offices.
MATERIAL SAFETY DATA SHEET (MSDS) MSDS are displayed at appropriate location in the Installation.

11. SAFETY TOOLS & TACKLES

TOOLS:

A Hand Tools:
Safety in the use of Hand Tools:
Common causes of accidents due to Hand Tools are:
* Wrong tool for job.
* Tool not stored properly.

* Wrong size of tool.
* Wrong method of handling/carrying.
* Poorly maintained tool.
* Unauthorised modification of tools.
* Defect in tool.

Important Preventive Measures:
1. Use the right tool
2. Use a tool in good condition
3. Use the tool in right way
4. Keep tools in safe place
5. Use appropiate PPE
6. Carry tools in tool box / bag
7. Check the tool against wear and tear.

SAFE PRACTICES FOR COMMONLY USED HAND TOOLS:

Screw Driver:

* Never use a screw driver as a chisel, punch or wedge.
* Never play with a screw driver.
* Do not carry the screw driver in your pocket.
* Never hold a job in your hand during using screw driver.
* Screw driver tip should match with the design and size of slot
* A damaged tip should be dressed
* For electrical work, use screw drivers with insulated handles.

Hammer:

* Use a soft-faced hammer to strike hardened steel surface.
* Use a heavy hammer for heavy jobs.
* Replace the loose wedge with a good steel or wooden one- never use a nail
* Replace the hammer if the face is damaged or has grown brittle.
* If the handle is greasy, clean it before using the hammer.
* Always replace cracked, splintered or broken handle, never repair them.
* Keep your eyes on the spot you are hitting.

*Use pliers to hold the job. Keep your hand out of of the way.

Chisel (Steel wedges, Punches and similar tools)

* Do not use mushroomed chisel.
* Dress the head whenever signs of cracking or spreading appear.
* A chisel only large enough for one job should be selected so that the blade is used rather than only one point or corner.
* Keep the cutting edge sharp and ground at the right angle. A sharp edge takes a good bite and does not slip easily. With a dull-edged chisel you have to strike harder and there is more chance that the hammer may miss and hit your hand

Spanner / Wrench :

* Use wrench of right size.
* Do not use worn wrench.
* Always get the jaws squarely on the nut.
* To prevent adjustable wrench from slipping, set the jaw up tight. Pull towards the movable jaw.
* Use a pipe wrench to remove worn nut.
* Always hold something solid with one hand and keep the wrench under control. * Never slip a pipe over a wrench to get more leverage. Get a bigger wrench.
* Never use a wrench around moving machinery.

Knife:

* Use sharp knife – occasionally, touch it up on a whetstone.
* Cut away from yourself – never point towards any part of your body.
* When a job is over put the knife in sheath.
* If you are setting the knife down for only a moment, put it where it won't be in the way and don't leave it where it might fall.

File :

* Do not use a file without a handle.
* Do not use files as punches or drifts.

* It is dangerous to play with a file. Files are brittle and break easily. When they do, pieces fly around.
* When a file gets clogged with metal it may slip. Keep it sharp- tap it on edge once in a while to knock off the filings. When that does not help, clean it with a file card.
* Files must not be twisted in slotted work.

Pliers :

* Do not use pliers as a substitute for wrenches.

* Be certain that pliers used for electrical works are insulated.

B Machine Tools:

01. Always maintain the tools in good condition.

02. For electrical tools ensure power cable is in good condition with sound insulation.

03. Ensure an adequate length of hose or cable for the job. Never try to strength it.

04. Keep electrical cables away from water. oil, heat and sharp edges.

05. Never lift or drag power tools by the air hose or cable.

06. Never drop portable grinding tools.

07. Never force grinding machine against the work.

08. Always wear eye protection equipment while using power tools.

C. Use of Non Sparking tools :

01. Always use non sparking spanners or hammers where flammable atmosphere is likely to exist.

02. Apply a stream of water when using pneumatic hammer for concrete breaking.

03. Wet the surface while chipping.

D. Hoisting Tackles:

01. All hoisting tackles should conform to IS specifications.

02. Clearly mark the maximum safe working load. Ensure that factor of safety is not less than 6 under full rated load.

03. Hoisting chains must be withdrawn from use , whenever

a) The chain has become unsafe due to overloading or through faulty annealing.

b) It has been stretched more than 5% of original length.

 c) Wear exceeds 8% of the nominal diameter of the link.

d) Cracks are noticed.

04 When not in use chains are to be stored properly to avoid rusting or corrosion.

05 Hoist shall be tested once in 6 months by 'Competent Person' and get certified. All data shall be inscribed in the Hoist.

B. Wire Ropes: A wire rope is unsafe due to,-

01. Excessive broken wire: If the number of visible broken wire in any length of 8 x diameter exceeds 10% of the total number of wires in the rope.

02. Failure of Core : This is indicated by reduction in rope diameter where lay length remains unaffected.

03. Elongation : This is indicated by reduction in rope diameter and increase in lay length. A stretch of over 5% in the lay length is considered to be excessive.

04. Kinking : A rope with any kink on it exceeding 1.5 times the diameter of the rop is unsafe.

05. Wire ropes for hoisting/hauling load should conform to the IS specifications. Factor of safety should not be less than 6.

06. Clearly mark size, material and the maximum safe working load on all wire ropes.

07. End of wire ropes should be seized to prevent strands from becoming loose.

08. Wire ropes should be removed from service when their strength is affected by broken wires corrosion or kinds.

09. Wire ropes when not in use should be stored in cool and dry place free from corrosive fumes. They should be treated with lubricants periodically.

Testing:

Safe working load shall be tested once in a year by 'Competent Person' and certified. Data shall be inscribed**.**

C. Hooks and rings : The following defects render the use of a hook unsafe

01. Throat Opening : Throat opening exceeding 18% of original opening.

02. Twist : Twist exceeding 10 degree along the vertical axis.

03. Hooks and ring should have at least material as that of chain. Forged steel is preferable.

04. A ring must be strong enough to carry a load equal with the sum of safe loads of the attached chains.

05. Replace the hook from the service whenever it is bent by overloading etc.
D. Shackles : Wear on body or Pin : Wear exceeding 8% diameter is unsafe.

Safe Slinging Method For 2 leg slinging Slinging angle from 60 degree upto 90 degree is very safe. Slinging angle from 90 degree upto 120 degree is safe.

Beyond 120 degree unsafe. Nylon ropes on account of their high stretching property are not suitable for slinging where the available head room for lifting operation is limited.

E. Fibre Ropes :

01. Fibre ropes for hoisting load should be made of high grade manila hemp. Factor of safety should not be less than 10. When ropes fibre other than high grade manila are used, proper allowance should be made for proportionate tensile strength.

02. All ropes must bear a metal tag indicating the maximum permissible load. Date of placing in service, name of supplier etc.

03. When two ropes are to be joined they should be spliced instead of knotting.

04. Do not use fibre ropes where they are likely to get contacted with acids/alkalis or other toxic fumes.

05. Always dry the wet ropes and store in ventilated place. Ropes should be placed in loose coils off the floor or wooden pegs. Manila ropes deteriorate quickly when it is kept wet.

F. Sheaves :

1. Grooves of sheave used in connection with chain should be provided with pockets to fit the links of the chain.

2. Grooves of sheaves should have rounded edge to avoid damage to ropes.

3. Sheaves that have become worn, chipped or the grooves corroded, should be taken out of service.

G. Slings :

The maximum safe working load should be marked and slings should conform to rules applicable to chains/ropes. All tackles use for hoisting shall be tested once in a year and get it certified by 'Competent Person'. Driving of Vehicles (General Safety Precautions) :

46

01. Mobile if any shall be switched off before entering Petrol Pump.

02. Always hang a red flag on the end of any material which extends from the front, sides, or the rear of the truck bed.

03. Keep the truck bed of trucks free of unnecessary material such as pipe nipples, bolts, nuts, etc.

04. Give predestrians the right of way.

05. Speed limit in the plant should be generally restricted to 30 & 40 Km/hr. for HMV & LMV resprectively.

06. While changing tyres, check the wheels to prevent the vehicle rolling off the jack.

07. Watch closely for protruding pipe line valves in the work area.

08. Engine must be stopped while filling the fuel tanks.

09. Truck drivers should look around before starting after a stop for any length of time. Check that your vehicle is in a roadworthy conditions before driving, that there is sufficient fuel, oil and water and that tyres, lights and steering gears are in good working order. A personal inspection may reveal defects which are likely to cause an accident. 10. When driving downhill do not put gears into neutral or drive with clutch disengaged. These pracices are dangerous because at times the vehicle cannot be brought under control in an emergency . When descending steep hills it is safe practice to engage gear in low gear especially when roads are wet.

11.When the siren sounds, all drivers, not required to attend fires,immediately pull off the road and park to the left hand side until siren stops blowing and fire vehicles have passed.

12. Double parking is prohibited on any road at any time.

13. Do not exceed the maximum load limit of any vehicle.

14. Drive on the left of the road.

15. When turning to the right do not cut corners.

16. Always give ways to an ambulance.

17. Always give way to vehicles on your right except when the truck is on a designated 'Main Road'.

18. Slow down when approaching an irtersection.

19. Bring your vehicle to a stop at all STOP signs. Make certain the road is clear before proceeding.

20. The internal combustion engines of all mobile and stationery equipment such as welding machines, air compressors, cranes, tractors, bulldozers, winch trucks, etc. must be stopped before being filled with petrol or other fuels.

21. Exhaust system of all units must be in good condition. The exhaust pipe from the engine up to and including the muffler or silencer must not be perforated. Any unit with defects of this nature is prohibited from operating in plant areas.

22. When transporting heavy materials such as pipe fitting, valves, motors, etc. the loads must be properly tied to prevent shifting. Load binders should be used if necessary.

23. When transporting gas cylinders, the drivers shall see that the cylinders are blocked or tied in place. The protective caps must be in place on the valves of cylinders.Cylinders may not be dropped or rough handled.

24. Dim your lights to oncoming vehicles and moderate your speed.

25. Vehicle without the caps on fuel tanks shall not be driven in the plant areas.

26. Do not leave the engine running when a vehicle is unattended. Driving of Winch

Truck :

01. Never brake suddenly with a load in an emergency.

02. Always watch that overhead clearances are sufficient.

03. Never lift a load greater than the maximum rated capacity shown on the truck. A safe load at ground level may be dangerous at higher levels.

04. Never turn suddenly when travelling with a load at speed.

05. Always stop and sound horn when approching intersections.

06. Never operate the truck with soft tyres.

07. Never engage reverse gear unless the truck has been first brought to a stand still.

08. Report any evidence of faults in the truck snd the lifting system. Do not continue to drive/ operate a faulty machine.

09. Operate always at safe travelling speed.

10. Keep a watchful eye for unstable stacks of load and report them. Never handle something you consider unsafe.

11. Stop engine before filling the fuel tank. Sponge away split fuel and replace the cap before starting the engine.

12. Lower loads slowly and stop them gradually.

13. Do not lift or lower loads while the truck is in motion. Keep them about six inches off the floor.

14. Never allow anyone to stand under elevated loads.

15. Never drive with wet or greasy hands.

Cranes :

01. Capacities of cranes shall not be exceeded.

02. When in doubt as to bearing capacity of the soil when lifting, use planking or mats.

03. When necessary to swing loads over areas where other employees are working, warning shall be given so that they can either move out of the way or be ready to move if necessarry. If practicable, the area should be cordoned off.

04. Crane booms shall be lowered to the ground when there is danger of high wind. Cranes with raised booms left overnight at operating units shall have load line tied off to a permanent structure to prevent pivoting.

05. Do not leave suspended loads unattended.

06. Operators shall lock the load and boom hoists and set the cabin locked before leaving the cab.

07. Extreme caution shall be exercised while working near high voltage electrical wires or equipment as contact with these can be extremely dangerous. Rocking motion of the boom under varying loads must be considered in order to maintain a safe distance from any electrical conductor.

08. If crane should contact high voltage line and cannot be disengaged by crane movement, do not step from crane to ground in such a way that you will touch the ground and crane simultaneously and be electrocuted. Either get power cut off or jump from the crane to the ground.

09. When necessary use a tag to control the load.

10. Truck cranes must be properly blocked and be on firm footing before lifting a heavy load with a low boom. Employees must stand clear of the swing of the crane and keep out from under suspended loads.

11. Riding on crane blocks or crane loads is prohibited.

Flatbeds and pick ups:

01. See that the truck is loaded in such a way that material will not shift or fall off in transit. Use chain and load binders when required.

02. Do not haul portable (wheel type) tool boxes on the bed of the truck.

03. Preparatory to towing trailers, be sure the hitch is well secured.

Bulldozers and Fronted Loaders :

01. Allow no one on crawler tracks of the machine while it is in motion.

02. Watch carefully for personnel or obstructions while reversing.

03. Watch for possibility of cave off while working near edge of excavations.

12. APPLY ONLINE FOR APPRENTICE, ELIGIBILITY, VACANCY, & SELECTION PROCESS

Selection Process for Apprentice

The selection process of IOCL Apprentice 2021 has three stages such as written test, document verification, and Physical fitness. Here are the details.

Written Test

- The eligible candidates who have successfully applied will get the Hall Ticket for the exam.
- The candidates will have to secure a minimum of 40% marks in the written test to qualify for the selection process.
- The minimum qualifying marks shall be 35% for candidates belonging to SC/ST/PwBD categories against reserved positions.
- Qualified candidates will be called for the next stage of the exam.

51

Document Verification

Depending on the Merit lists, candidates will be called for document verification. Here is a list of documents that will be required:

- 10th Pass/Matriculation certificate issued by the concerned education board
- SC/ST/OBC(NCL)/Disability/EWS-Income & Asset Certificate Competent Authority (if applicable)
- Class XII or SCVT/Graduation/Diploma in Engineering
- Class XII/Final ITI Marksheet and certificate.

- Conversion certificate from CGPA/OGPA/Letter Grade to the percentage of marks, if applicable.
- Skill certificate issued by an awarding body if applicable
- Any other Certificate, as specified.

Pre-Engagement Physical Fitness

- Selected candidates have to fulfill the minimum physical fitness standard/parameters.
- Medical examination of PwBD candidates shall be with due consideration to the provisions of Rights of Persons.
- Those candidates who will be declared fit by the authority will join as an apprentice.

Vacancy for Apprentice

The conducting body has specified the number of vacancies as per the region and posts. There are a total of 505 vacancies across India. In the below tabular, the region-wise vacancies have been mentioned:

Region	vacancy
West Bengal	221
Bihar	76
Odisha	66
Jharkhand	41
Assam	80
West Bengal/ Bihar/ Odisha/ Jharkhand/ Assam	21
Total	505

Salary Component	IOCL Pay Scale Structure (INR)
Basic pay	24,900
DA (126.9% of Basic pay)	31,598
Perks (50% of Basic pay)	12,450
HRA (For metro cities)	7,470
EPF (12% of Basic pay plus DA)	6,780
Total Gross Salary in Rs	8,3198

ALLOWANCES

The salary structure and allowances will vary depending on the region and the posts. The PayScale hike of IOCL will be between 30% to 40% that will be merged in the basic pay. Here is the expected salary as per the designation:

The candidates will undergo a 1-year training program as per the disciplines. However, the training period for – Data Entry Operator (Fresher Apprentices) will be 15 months long, and Retail Sales Associate (Fresher) will have a training of 14 months.

IOCL Pay Scale Structure (INR)

CONCLUSION

With liberalization bringing in new talent and increased competition recruitment has taken new strategic dimensions. The overall aim of the recruitment and selection process should be to obtain at minimum cost the number and quality of employees required to satisfy the human resource needs of the company.

It is evident from the study that organizations which have responded to the change in the environment by reviewing its functions have attained success. IOCL through their manpower extensively. This man power plant has closed linkages with the corporate objectives and business plans. These are drawn after a detailed analysis following a sanction.

Departure tender sanction heavily determine the recruitment pattern in the PSU.

Being a PSU also limit it strategies undertaken to market the image of the company. Also it has to meet the quotas set for SC/ST by government. Till I hear back campus recruitment was very much there but it has been discontinued as it was felt that there was some biasedness attached to it as IOCL physics only premier institutes.

In case of recruitment for advertisement the candidates are screened via GATE and other outsourced agencies. The final interview is held by the organization.

Internal hiring is there for managerial level which may or may not involve a written test.

The top management is involved in the recruitment process. The evaluation process involves the assessment of all factors from education to experience, mobility etc., differs depending upon the nature of the job.

IOCL also has taken lead to make its recruitment and selection policy more efficient. It is has started online registration and also result of examination can be seen by candidates on internet which is a great step in today's digital market.

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Project Report of BCA Department

Kazi Nazrul University

A Project Submitted in partial fulfillment of

The requirement for the Honors Degree of

Bachelor of Computer Applications

PAYROLL MANAGMENT SYSTEM

Year of Examination: - _____2021_____

Submitted by

Name: Akash Kumar Singh
Reg No: KNUREG18103000960

Name: Golu Rajak
Reg No: KNUREG18103001198

Name: Avishek Deep
Reg No: KNUREG18103001168

Name: Abhinash Kumar Singh
Reg No: KNUREG18103001213

Of

Bidhan Chandra College

CERTIFICATE FROM PROJECT GUIDE

This is to certify that this project entitled "EMPLOYEE PAYROLL MANAGEMENT SYSTEM" submitted in partial fulfillment of the degree of BCA, Kazi Nazrul University, done by Mr. _____Akash Kumar Singh_____ Registration No. _KNUREG18103001198_____, Mr. _____Golu Rajak_____ Registration No. _____KNUREG18103000960_____ , Mr. _____Avishek Deep_____ Registration No. _____KNUREG18103001168_____ , Mr. _____Abhinash Kumar Singh_____ Registration No. _____KNUREG18103001213_____ is an authentic work carried out by him/her at _____Rajdip Chatterjee_____ under my guidance. The matter embodied in this project work has not been submitted earlier for award of degree or diploma to the best of my knowledge. And belief and project report is developed according to the **"BCA PROJECT REPORT STANDARD 2021, KAZI NAZRUL UNIVERSITY "**.

Signature of the Guide

CONTENTS

Project Introduction

The purpose of this document is to present an overall description and listing of the functionality of The Testing Assistant for Regression Testing. It will explain the scope of the project as well as describe the system environment. This document will also include an easily traceable means by which the user can trace each functionality's brief description . Also included is a user interface specification whereby the user can demonstrate interface standards to be used in designing the system. Furthermore, considerations regarding non-functional requirements and system evolution are addressed.

This document is intended for users of the system including Unit Testers, unit test supervisors, and any individuals involved in testing a new system in development. This document will also be used as a reference for the developers of The Testing Assistant for Regression Testing.

SYSTEM PLANNING

EXISTING SYSTEM:

System Analysis is a detailed study of the various operations performed by a system and their relationships within and outside of the system. Here the key question is- what all problems exist in the present system? What must be done to solve the problem? Analysis begins when a user or manager begins a study of the program using existing system.

During analysis, data collected on the various files, decision points and transactions handled by the present system. The commonly used tools in the system are Data Flow Diagram, interviews, etc. Training, experience and common sense are required for collection of relevant information needed to develop the system. The success of the system depends largely on how clearly the problem is defined, thoroughly investigated and properly carried out through the choice of solution. A good analysis model should provide not only the mechanisms of problem understanding but also the frame work of the solution. Thus it should be studied thoroughly by collecting data about the system. Then the proposed system should be analyzed thoroughly in accordance with the needs.

- System analysis can be categorized into four parts.

- System planning and initial investigation
- Information Gathering
- Applying analysis tools for structured analysis
- Feasibility study
- Cost/ Benefit analysis.

In our existing system all the transaction of books are done manually, So taking more time for a transaction like borrowing a book or returning a book and also for searching of members and books. Another major disadvantage is that to preparing the list of books borrowed and the available books in the library will take more time, currently it is doing as a one day process for verifying all records. So after conducting the feasibility study we decided to make the manual Library management system to be computerized.

FEASIBILITY ANALYSIS

Whatever we think need not be feasible. It is wise to think about the feasibility of any problem we undertake. Feasibility is the study of impact, which happens in the organization by the development of a system. The impact can be either positive or negative. When the positives nominate the negatives, then the system is considered feasible. Here the feasibility study can be performed in two ways such as technical feasibility and Economical Feasibility.

Technical Feasibility:

We can strongly says that it is technically feasible, since there will not be much difficulty in getting required resources for the development and maintaining the system as well. All the resources needed for the development of the software as well as the maintenance of the same is available in the organization here we are utilizing the resources which are available already.

Economic Feasibility

Development of this application is highly economically feasible. The organization needs not spend much for the development of the system already available. The only thing is to be done is making an environment for the development with an effective supervision. I f we are doing so; we can attain the maximum usability of the corresponding resources. Even after the development, the organization will not be in a condition to invest more in t he organization. Therefore, the system is economically feasible.

HARDWARE CONFIGURATION

- Processor : Pentium III 630MHz

- RAM : 128 MB

- Hard Disk : 20GB

- Monitor : 15" Color monitor

- Key Board : 122 Keys

SOFTWARE CONFIGURATION

- Windows 10

- MySQL Database

- PyCharm

- Chrome Browser

SYSTEM REQUIREMENTS

This management system can be used in Windows 7 ,Windows 10 , Windows 8.1,Ubantu, Kali Linux.

The system must be running Windows 7, Windows 8.1, Windows 10 or Windows 11 operating system and must meet the following hardware requirements.

- For Windows 7 based computers, a 1.60 GHz or higher processor with minimum 2 GB of Ram.
- For Windows 8.1 based computers, a 1.60 GHz or higher processor with minimum 2 GB of Ram.
- For Windows 10 based computers, a 1.60 GHz or higher processor with minimum 2 GB of Ram.
- For Windows 11 based computers, a 1.60 GHz or higher processor with minimum 2 GB of Ram.

SYSTEM IMPLEMENTATION

Implementation is the stage in the project where the theoretical design is turned into a working system. The implementation phase constructs, installs and operates the new system. The most crucial stage in achieving a new successful system is that it will work efficiently and effectively.

There are several activities involved while implementing a new project they are

• End user training

• End user Education

• Training on the application software

• System Design

• Parallel Run and To New System

• Post implementation Review

End user Training:

The successful implementation of the new system will purely upon the involvement of the officers working in that department. The officers will be imparted the necessary training on the new technology.

End User Education:

The education of the end user start after the implementation and testing is over.

When the system is found to be more difficult to understand and complex, more effort is put to educate the end used to make them aware of the system, giving them lectures about the new system and providing them necessary documents and materials about how the system can do this.

Training of application software:

After providing the necessary basic training on the computer awareness, the users will have to be trained upon the new system such as the screen flows and screen design type of help on the screen , type of errors while entering the data , the corresponding validation check at each entry and the way to correct the data entered. It should then cover information needed by the specific user or group to use the system.

Post Implementation View:

The department is planning a method to know the states of the past implementation process. For that regular meeting will be arranged by the concerned officers about the implementation problem and success

PROJECT DESIGNING

Design Document

- The entire system is projected with a physical diagram which specifics the actual storage parameters that are physically necessary for any database to be stored on to the disk. The overall systems existential idea is derived from this diagram.

- The relation upon the system is structure through a conceptual ER-Diagram, which not only specifics the existential entities but also the standard relations through which the system exists and the cardinalities that are necessary for the system state to continue.

Test report

Is the menu bar displayed in the appropriate contested some system related features included either in menus or tools? Do pull –Down menu operation and Tool-bars work properly? Are all menu function and pull down sub function properly listed ?; Is it possible to invoke each menu function using a logical assumptions that if all parts of the system are correct, the goal will be successfully achieved .? In adequate testing or non-testing will leads to errors that may appear few months later.

This create two problem

1. Time delay between the cause and appearance of the problem.

2. The effect of the system errors on files and records within the system

The purpose of the system testing is to consider all the likely variations to which it will be suggested and push the systems to limits. The testing process focuses on the logical intervals of the software ensuring that all statements have been tested and on functional interval is conducting tests to uncover errors and ensure that defined input will produce actual results that agree with the required results.

Program level testing, modules level testing integrated and carried out.

CONCLUSION

Our project is only a humble venture to satisfy the needs in a normal employee management system. This package shall prove to be a powerful package in satisfying all the requirements of the organization. The objective of software planning is to provide a frame work that enables the manger to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses. Last but not least it is no the work that played the ways to success but **ALMIGHTY**

Home Page

index.html

```html
<!DOCTYPE html>
<html lang="en">

<head>
  <title>Python Flask Bucket List App</title>
  <link rel="stylesheet" href="../static/CSS/index.css">

  <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css"
    integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">

</head>
```

```html
<body>
  <div class="padding">
    <img src="../static/home.png" alt="">
  </div>
  <div class="container">
    <div class="header">
      <nav>
        <ul class="nav nav-pills pull-right">
        </ul>
      </nav>
      <h3 class="text-muted">Home</h3>
    </div>
    <div class="jumbotron">
      <h1>Payroll Management System</h1>
      <p class="lead"></p>
      <p><a class="btn btn-lg btn-
success" href="showLogin" role="button">Login</a></p>
    </div>
    <div class="row marketing">
      <div class="col-lg-6">
      </div>
    </div>
    <footer class="footer">
      <p>&copy; Company 2017</p>
    </footer>

  </div>
</body>

</html>
```

External Css:--

```css
.padding{
    display: flex;
    justify-content: center;
    align-items: center;

}
```

Login Page

Login.html

```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Sign Up</title>

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">
    <link href="../static/css/login.css" rel="stylesheet">
    <script src="../static/js/jquery-1.11.2.js"></script>
    <script src="../static/js/login.js"></script>
    <script src="../static/js/admin.js"></script>

  </head>

  <body>
    {% with messages = get_flashed_messages() %}
  {% if messages %}
    <ul class=flashes>
    {% for message in messages %}
      <li>{{ message }}</li>
    {% endfor %}
    </ul>
  {% endif %}
{% endwith %}
```

```html
<div class="container">
  <div class="header">
    <nav>
      <ul class="nav nav-pills pull-right">
        <li role="presentation" ><a href="index">Home</a></li>

      </ul>
    </nav>
    <h3 class="text-muted">Payroll Management System</h3>
  </div>

  <div class="jumbotron">
    <h1>Sign In</h1>
    <form class="form-signin">
    <label for="inputEmail" class="sr-only">Username</label>
    <input type="username" name="inputusername" id="inputusername" class="form-control" placeholder="Username" required autofocus>
    <label for="inputPassword" class="sr-only">Password</label>
    <input type="password" name="inputPassword" id="inputPassword" class="form-control" placeholder="Password" required>

    <button id="btnlogin" class="btn btn-lg btn-primary btn-block"  type="button">Employee's Login</button>
    <button id="adminlogin" class="btn btn-lg btn-primary btn-block"  type="button">Admin Login</button>

  </form>
  </div>



  <footer class="footer">
    <p>&copy; Company 2017</p>
  </footer>

  </div>
  </body>
</html>
```
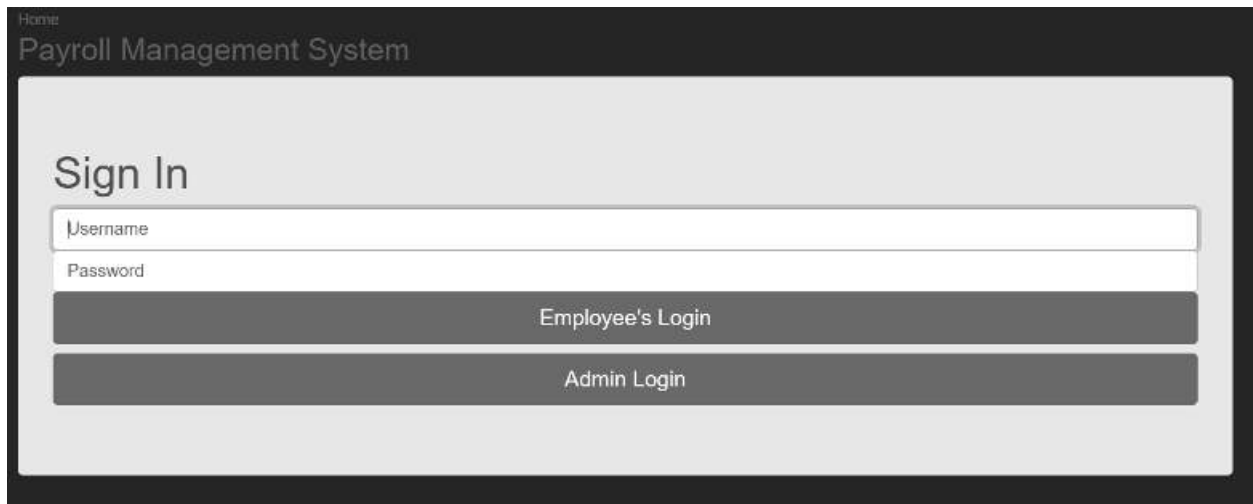
External Css:--

```css
@charset "utf-8";
@import url(http://weloveiconfonts.com/api/?family=fontawesome);

[class*="fontawesome-"]:before {
  font-family: 'FontAwesome', sans-serif;
```

```css
}

body {
  background: #2c3338;
  color: #606468;
  font: 87.5%/1.5em 'Open Sans', sans-serif;
  margin: 0;
}

input {
  border: none;
  font-family: 'Open Sans', Arial, sans-serif;
  font-size: 16px;
  line-height: 1.5em;
  padding: 0;
  -webkit-appearance: none;
}

p {
  line-height: 1.5em;
}

after { clear: both; }

#login {
  margin: 50px auto;
  width: 320px;
}

#login form {
  margin: auto;
  padding: 22px 22px 22px 22px;
  width: 100%;
  border-radius: 5px;
  background: #282e33;
  border-top: 3px solid #434a52;
  border-bottom: 3px solid #434a52;
}

#login form span {
  background-color: #363b41;
  border-radius: 3px 0px 0px 3px;
  border-right: 3px solid #434a52;
  color: #606468;
  display: block;
  float: left;
  line-height: 50px;
  text-align: center;
  width: 50px;
```

```css
    height: 50px;
}

#login form input[type="text"] {
  background-color: #3b4148;
  border-radius: 0px 3px 3px 0px;
  color: #a9a9a9;
  margin-bottom: 1em;
  padding: 0 16px;
  width: 235px;
  height: 50px;
}

#login form input[type="password"] {
  background-color: #3b4148;
  border-radius: 0px 3px 3px 0px;
  color: #a9a9a9;
  margin-bottom: 1em;
  padding: 0 16px;
  width: 235px;
  height: 50px;
}

#login form input[type="submit"] {
  background: #b5cd60;
  border: 0;
  width: 100%;
  height: 40px;
  border-radius: 3px;
  color: white;
  cursor: pointer;
  transition: background 0.3s ease-in-out;
}
#login form input[type="submit"]:hover {
  background: #16aa56;
}
```

External JS:--

login.js

```javascript
$(document ).ready(function()
    {
        $('#btnlogin').click(function(){

            $.ajax({
                url: '/login',
                data: $('form').serialize(),
                type: 'POST',
                success: function(response){
                    window.location = "../showProfile";

                },
                error: function(error){
                    console.log(error);
                }
            });

        return false;
        });
    });
```

admin.js

```javascript
$(document ).ready(function()
    {
        $('#adminlogin').click(function(){

            $.ajax({
                url: '/adminlogin',
                data: $('form').serialize(),
                type: 'POST',
                success: function(response){
                    window.location = "../showAdminhome";
                },
                error: function(error){
                    console.log(error);
                }
```

```
                    });
            return false;
            });
        });
```

Admin Dashboard Page

AdminHome.html

```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Admin</title>
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/c
ss/bootstrap.min.css" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="an
onymous">
    <link href="../static/css/adminhome.css" rel="stylesheet">
    <script src="../static/js/jquery-1.11.2.js"></script>
    <script src="../static/js/report.js"></script>
    <script src="../static/js/addemp.js"></script>
```

```html
    </head>

    <body>

        <div class="container">
            <div class="header">
                <nav>
                    <ul class="nav nav-pills pull-right">
                        <li role="presentation" ><a href="index">Home</a></li>

                    </ul>
                </nav>
                <h3 class="text-muted">Admin Dashboard</h3>
            </div>

            <div class="jumbotron">


                <button id="btnaddemployee" class="btn btn-lg btn-primary btn-
block"  type="button">Add an Employee</button>
                <button id="btnreport" class="btn btn-lg btn-primary btn-
block"  type="button">Show Report</button>

            </div>



            <footer class="footer">
                <p>&copy; Company 2017</p>
            </footer>

        </div>
    </body>
</html>
```

External Css:--

```css
@charset "utf-8";
@import url(http://weloveiconfonts.com/api/?family=fontawesome);

[class*="fontawesome-"]:before {
  font-family: 'FontAwesome', sans-serif;
}

body {
```

```css
  background: #2c3338;
  color: #606468;
  font: 87.5%/1.5em 'Open Sans', sans-serif;
  margin: 0;
}

input {
  border: none;
  font-family: 'Open Sans', Arial, sans-serif;
  font-size: 16px;
  line-height: 1.5em;
  padding: 0;
  -webkit-appearance: none;
}

p {
  line-height: 1.5em;
}

after { clear: both; }

#login {
  margin: 50px auto;
  width: 320px;
}

#login form {
  margin: auto;
  padding: 22px 22px 22px 22px;
  width: 100%;
  border-radius: 5px;
  background: #282e33;
  border-top: 3px solid #434a52;
  border-bottom: 3px solid #434a52;
}

#login form span {
  background-color: #363b41;
  border-radius: 3px 0px 0px 3px;
  border-right: 3px solid #434a52;
  color: #606468;
  display: block;
  float: left;
  line-height: 50px;
  text-align: center;
  width: 50px;
  height: 50px;
}
```

```css
#login form input[type="text"] {
  background-color: #3b4148;
  border-radius: 0px 3px 3px 0px;
  color: #a9a9a9;
  margin-bottom: 1em;
  padding: 0 16px;
  width: 235px;
  height: 50px;
}

#login form input[type="password"] {
  background-color: #3b4148;
  border-radius: 0px 3px 3px 0px;
  color: #a9a9a9;
  margin-bottom: 1em;
  padding: 0 16px;
  width: 235px;
  height: 50px;
}

#login form input[type="submit"] {
  background: #b5cd60;
  border: 0;
  width: 100%;
  height: 40px;
  border-radius: 3px;
  color: white;
  cursor: pointer;
  transition: background 0.3s ease-in-out;
}
#login form input[type="submit"]:hover {
  background: #16aa56;
}
```

External JS:--

report.js

```javascript
$(document ).ready(function()
    {
        $('#btnreport').click(function(){
```

```javascript
        $.ajax({
            url: '/adminlogin',
            data: $('form').serialize(),
            type: 'POST',
            success: function(response){
                window.location = "../showReport";
            },
            error: function(error){
                console.log(error);
            }
        });
    return false;
    });
});
```

addemp.js

```javascript
$(document ).ready(function()
    {
        $('#btnaddemployee').click(function(){

            $.ajax({
                url: '/adminlogin',
                data: $('form').serialize(),
                type: 'POST',
                success: function(response){
                    window.location = "../showSignUp";
                },
                error: function(error){
                    console.log(error);
                }
            });
        return false;
        });
    });
```

Add Employee Page

AddEmployee.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Add Employee</title>

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/c
ss/bootstrap.min.css" integrity="sha384-
```

```html
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="an
onymous">
    <link href="../static/css/signup.css" rel="stylesheet">
    <script src="../static/js/jquery-1.11.2.js"></script>
    <script src="../static/js/signUp.js"></script>

  </head>

  <body>

    <div class="container">
      <div class="header">
        <nav>
          <ul class="nav nav-pills pull-right">
            <li role="presentation" ><a href="showAdminhome">Back</a></li>

          </ul>
        </nav>
        <h3 class="text-muted">Admin Home</h3>
      </div>

      <div class="jumbotron">
        <h1>Add Employee</h1>
        <form class="form-signin">
        <div class="form-group" >

        <label for="inputFName" class="sr-only">First Name</label>
        <input type="Fname" name="inputFName" id="inputFName" class="form-
control" placeholder="First Name" required autofocus>
        <label for="inputMName" class="sr-only">Middle Name</label>
        <input type="Mname" name="inputMName" id="inputMName" class="form-
control" placeholder="Middle Name" required autofocus>
        <label for="inputLName" class="sr-only">Last Name</label>
        <input type="Lname" name="inputLName" id="inputLName" class="form-
control" placeholder="Last Name" required autofocus>

        </div>

        <div class="form-group" >

        <label for="inputDesignation" class="sr-only">Designation</label>
        <input type="Designation" name="inputDesignation" id="inputDesignation" c
lass="form-control" placeholder="Designation" required autofocus>
        <label for="inputID" class="sr-only">Employee ID</label>
        <input type="ID" name="inputID" id="inputID" class="form-
control" placeholder="Employee ID" required autofocus>

        </div>
```

```html
        <div class="form-group" >

        <label for="inputDOB" class="sr-only">Date of Birth</label>
        <input type="DOB" name="inputDOB" id="inputDOB" class="form-
control" placeholder="YYYY-MM-DD" required autofocus>
        <label for="inputContact" class="sr-only">Contact Number</label>
        <input type="Contact" name="inputContact" id="inputContact " class="form-
control" placeholder="Ph. Number" required autofocus>

        </div>

        <div class="form-group" >

        <label for="inputBasic" class="sr-only">Basic Salary</label>
        <input type="basic" name="inputBasic" id="inputBasic " class="form-
control" placeholder="Basic Salary" required autofocus>
        <label for="inputOvertime" class="sr-only">Overtime</label>
        <input type="Overtime" name="inputOvertime" id="inputOvertime" class="for
m-control" placeholder="Overtime(hours)" required autofocus>
        <label for="inputVPF" class="sr-only">Voluntary Provisional Fund</label>
        <input type="VPF" name="inputVPF" id="inputVPF" class="form-
control" placeholder="VPF(%)" required autofocus>
        <label for="inputMedico" class="sr-only">Medical Compensation</label>
        <input type="Medico" name="inputMedico" id="inputMedico" class="form-
control" placeholder="Medical Compensation" required autofocus>
        <label for="inputLeavepen" class="sr-only">Leave Penalty</label>
        <input type="Leavepen" name="inputLeavepen" id="inputLeavepen" class="for
m-control" placeholder="Number of Leave Days" required autofocus>
        <label for="inputInsurance" class="sr-only">Insurance</label>
        <input type="Insurance" name="inputInsurance" id="inputInsurance" class="
form-control" placeholder="Insurance(INR)" required autofocus>

        </div>

        <div class="form-group" >

        <label for="inputPeer" class="sr-only">Peer Rating</label>
        <input type="Peer" name="inputPeer" id="inputPeer" class="form-
control" placeholder="Rating by Peers (max 10)" required autofocus>
        <label for="inputManager" class="sr-only">Manager Rating</label>
        <input type="Manager" name="inputManager" id="inputManager" class="form-
control" placeholder="Rating by Manager (max 10)" required autofocus>

        </div>

        <label for="inputEmail" class="sr-only">username</label>
        <input type="email" name="inputEmail" id="inputEmail" class="form-
control" placeholder="Pick a Username" required autofocus>
        <label for="inputPassword" class="sr-only">Password</label>
```

```html
        <input type="password" name="inputPassword" id="inputPassword" class="for
m-control" placeholder="Password" required>

        <button id="btnSignUp" class="btn btn-lg btn-primary btn-
block" type="button">Submit</button>
      </form>
      </div>



      <footer class="footer">
        <p>&copy; Company 2021</p>
      </footer>

    </div>
  </body>
</html>
```

External Css:--

```css
body {
  padding-top: 40px;
  padding-bottom: 40px;
}

.form-signin {
  max-width: 330px;
  padding: 15px;
  margin: 0 auto;
}
.form-signin .form-signin-heading,
.form-signin .checkbox {
  margin-bottom: 10px;
}
.form-signin .checkbox {
  font-weight: normal;
}
.form-signin .form-control {
  position: relative;
  height: auto;
  -webkit-box-sizing: border-box;
    -moz-box-sizing: border-box;
         box-sizing: border-box;
  padding: 10px;
```

```css
    font-size: 16px;
}
.form-signin .form-control:focus {
  z-index: 2;
}
.form-signin input[type="email"] {
  margin-bottom: -1px;
  border-bottom-right-radius: 0;
  border-bottom-left-radius: 0;
}
.form-signin input[type="password"] {
  margin-bottom: 10px;
  border-top-left-radius: 0;
  border-top-right-radius: 0;
}
```

External JS:--

```javascript
$(function(){
    $('#btnSignUp').click(function(){

        $.ajax({
            url: '/signUp',
            data: $('form').serialize(),
            type: 'POST',
            success: function(response){
                console.log(response)
            },
            error: function(error){
                console.log(error);
            }
        });
        return false;
    });
});
```

Company Report

ShowReport.html

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1" />
    <meta name="description" content="" />
    <meta name="author" content="" />

    <title>REPORT</title>
    <!-- BOOTSTRAP CORE STYLE  -->
    <link href="../static/css/profile.css" rel="stylesheet">
    <!-- CUSTOM STYLE  -->
    <link href="../static/css/custom-style.css" rel="stylesheet" />
    <!-- GOOGLE FONTS -->
    <link href='http://fonts.googleapis.com/css?family=Open+Sans:400,700,300' rel='stylesheet' type='text/css' />

</head>
<body>
    <div class="container">
```

```html
        <div class="header">
          <nav>
            <ul class="nav nav-pills pull-right">
              <li role="presentation" ><a href="showAdminhome">Back</a></li>

            </ul>
          </nav>
          <h3 class="text-muted">Company Report</h3>
        </div>
  <div class="container">

      <div class="row pad-top-botm ">
          <div class="col-lg-6 col-md-6 col-sm-6 ">
              <img src="../static/logo.jpg" style="padding-bottom:20px;" />
          </div>
           <div class="col-lg-6 col-md-6 col-sm-6">

                <strong>  OxyRed  Technologies  LLC.</strong>
               <br />
                   <i>Address :</i> 245/908 , New York Lane,
               <br />
                   Forth Street , Deumark,
               <br />
                   United States.

          </div>
      </div>
      <div  class="row text-center contact-info">
          <div class="col-lg-12 col-md-12 col-sm-12">
              <hr />
              <span>
                  <strong>Email : </strong>  info@yourdomain.com
              </span>
              <span>
                  <strong>Call : </strong>  +95 - 890- 789- 9087
              </span>
               <span>
                  <strong>Fax : </strong>  +012340-908- 890
              </span>
              <hr />
          </div>
      </div>
      <div  class="row pad-top-botm client-info">
          <div class="col-lg-6 col-md-6 col-sm-6">
          <h4>  <strong>CEO</strong></h4>
            <strong>Rajdeep Chatterjee</strong>
             <br />
                 <b>Address :</b> 145/908 , New York Lane,
              <br />
```

```html
                    United States.
                <br />
                <b>Call :</b> +90-908-567-0987
                 <br />
                <b>E-mail :</b> rajdeep@bidhanchandra.com
         </div>
          <div class="col-lg-6 col-md-6 col-sm-6">

              <h3>  <strong>Account Details </strong></h3>
           <b>Total Funds : {{bale}}  INR </b>
             <br />
              Report Date :  01st November 2021



         </div>
      </div>
      <div class="row">
         <div class="col-lg-12 col-md-12 col-sm-12">
           <div class="table-responsive">
                             <table class="table table-striped table-
bordered table-hover">
                             <thead>
                                <tr>
                                   <th>S. No.</th>
                                   <th>Particulars</th>
                                   <th>Total Amount</th>
                                </tr>
                             </thead>
                             <tbody>
                                <tr>
                                   <td>1</td>
                                   <td>Total Insurance</td>
                                   <td>{{sumIns}} INR</td>
                                </tr>
                                <tr>
                                   <td>2</td>
                                   <td>Total Provisional Fund</td>
                                   <td>{{sumPf}} INR</td>
                                </tr>
                                <tr>
                                    <td>3</td>
                                   <td>Total Professional Tax</td>

                                   <td>{{sumPt}} INR</td>
                                </tr>
                                <tr>
                                    <td>4</td>
                                   <td>Total Income Tax</td>
```

```html
                                    <td>{{sumIt}} INR</td>
                                </tr>
                                <tr>
                                    <td>5</td>
                                    <td>Additional Funds</td>

                                    <td>{{fund}} INR</td>
                                </tr>

                            </tbody>
                        </table>
                    </div>
                <hr />

        </div>
</body>
</html>
```

External Css:--

Custom.css:-

```css
/* ============================================================
   GENERAL STYLES
 ============================================================ */
body {
    font-family: 'Open Sans', sans-serif;
    font-size:16px;
    line-height:30px;
}
.pad-top-botm {
    padding-bottom:40px;
    padding-top:60px;
}
h4 {
    text-transform:uppercase;
}
/* ============================================================
   PAGE STYLES
 ============================================================ */

.contact-info span {
    font-size:14px;
    padding:0px 50px 0px 50px;
```

```
        }

        .contact-info hr {
            margin-top: 0px;
margin-bottom: 0px;
        }

        .client-info {
            font-size:15px;
        }

        .ttl-amts {
            text-align:right;
            padding-right:50px;
        }
```

User Profile

Profile 7598426   Logout

OxyRed Technologies LLC.
Address : 245/908 , New York Lane,
Forth Street , Deumark,
United States.

Email : info@yourdomain.com   Call : +95 - 890- 789- 9087   Fax : +01234D-908- 880

EMPLOYEE INFORMATION   **PAYSLIP**

Chatterjee Software Developer 7598426   Bill Amount : 10284900.0 INR
ID : 7598426   Bill Date : 01st November 2017
Contact : 123456789
Date of Birth : Kumar

S. No.	Payment	Amount
1	Basic Salary	2500000.0 INR
2	Food Allowance	250000.0 INR
3	Medical Allowance	5000.0 INR
3	Medical Allowance	5000.0 INR
4	Overtime Compensation	2000000.0 INR
5	House Rent Allowance	1000000.0 INR
6	Dearness Allowance	250000.0 INR
7	Conveyance Allowance	5000000 INR
8	Performance Bonus	500000.0 INR

TOTAL AMOUNT :: 11505000.0 INR

S. No.	Deductions	Amount
1	Insurance	20000 INR
2	Professional Tax	100.0 INR
3	Income Tax	500000.0 INR
4	Provisional Fund	600000.0 INR
5	Voluntary Provisional Fund	100000.0 INR
6	Leave Penalty	0.0 INR

TOTAL AMOUNT : 1220100.0 INR

Payable Amount : 10284900.0 INR

UserProfile.html

```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1, maximum-
scale=1" />
    <meta name="description" content="" />
    <meta name="author" content="" />
    <title>PROFILE</title>
    <!-- BOOTSTRAP CORE STYLE  -->
```

```html
    <link href="../static/css/profile.css" rel="stylesheet">
    <!-- CUSTOM STYLE  -->
    <link href="../static/css/custom-style.css" rel="stylesheet" />
    <!-- GOOGLE FONTS -->
    <link href='http://fonts.googleapis.com/css?family=Open+Sans:400,700,300' rel
='stylesheet' type='text/css' />


</head>
<body>

  {% with messages = get_flashed_messages() %}
  {% if messages %}
    <ul class=flashes>
    {% for message in messages %}
      <li>{{ message }}</li>
    {% endfor %}
    </ul>
  {% endif %}
{% endwith %}
   <div class="container">
      <div class="header">
        <nav>
          <ul class="nav nav-pills pull-right">
            <li role="presentation" ><a href="index">Logout</a></li>

          </ul>
        </nav>
        <h3 class="text-muted">Profile {{key}}</h3>
      </div>
 <div class="container">

      <div class="row pad-top-botm ">
         <div class="col-lg-6 col-md-6 col-sm-6 ">
            <img src="../static/logo.jpg" style="padding-bottom:20px;" />
         </div>
          <div class="col-lg-6 col-md-6 col-sm-6">

              <strong>   OxyRed  Technologies  LLC.</strong>
            <br />
                <i>Address :</i> 245/908 , New York Lane,
            <br />
                Forth Street , Deumark,
            <br />
                United States.

         </div>
      </div>
      <div  class="row text-center contact-info">
         <div class="col-lg-12 col-md-12 col-sm-12">
```

```html
                    <hr />
                    <span>
                        <strong>Email : </strong>  info@yourdomain.com
                    </span>
                    <span>
                        <strong>Call : </strong>  +95 - 890- 789- 9087
                    </span>
                     <span>
                        <strong>Fax : </strong>  +012340-908- 890
                    </span>
                    <hr />
            </div>
        </div>
        <div  class="row pad-top-botm client-info">
            <div class="col-lg-6 col-md-6 col-sm-6">
            <h4>  <strong>Employee Information</strong></h4>
              <strong>  {{fn}} {{mn}} {{ln}}</strong>
                <br />
                   <b>ID :</b> {{key}}<br/>
                   <b>Contact :</b> {{con}}<br/>
                <b>Date of Birth :</b> {{birthdate}}
            </div>
             <div class="col-lg-6 col-md-6 col-sm-6">

                <h4>  <strong>Payslip </strong></h4>
              <b>Bill Amount :  {{net}} INR </b>
                <br />
                 Bill Date :  01st November 2017


            </div>
        </div>
        <div class="row">
            <div class="col-lg-12 col-md-12 col-sm-12">
              <div class="table-responsive">
                              <table class="table table-striped table-
bordered table-hover">
                          <thead>
                              <tr>
                                  <th>S. No.</th>
                                  <th>Payment</th>
                                  <th>Amount</th>
                              </tr>
                          </thead>
                          <tbody>
                              <tr>
                                  <td>1</td>
                                  <td>Basic Salary</td>
                                  <td>{{basicsal}} INR</td>
```

```html
                            </tr>
                            <tr>
                                <td>2</td>
                                <td>Food Allowance</td>
                                <td>{{foodall}} INR</td>
                            </tr>
                            <tr>
                                 <td>3</td>
                                <td>Medical Allowance</td>

                                <td>{{medicall}} INR</td>
                            </tr>
                            <tr>
                                 <td>4</td>
                                <td>Overtime Compensation</td>

                                <td>{{otcomp}} INR</td>
                            </tr>
                            <tr>
                                 <td>5</td>
                                <td>House Rent Allowance</td>

                                <td>{{hrall}} INR</td>
                            </tr>
                             <tr>
                                 <td>6</td>
                                <td>Dearness Allowance</td>

                                <td>{{dall}} INR</td>
                            </tr>
                             <tr>
                                 <td>7</td>
                                <td>Conveyance Allowance</td>

                                <td>{{call}} INR</td>
                            </tr>
                             <tr>
                                 <td>8</td>
                                <td>Performance Bonus</td>

                                <td>{{perf}} INR</td>
                            </tr>
                        </tbody>
                </table>
      </div>
    <hr />
    <div class="ttl-amts">
      <h4>  Total Amount : {{gro}} INR </h4>
    </div>
```

```html
                <br/>

                 <div class="table-responsive">
                            <table class="table table-striped table-
    bordered table-hover">
                            <thead>
                                <tr>
                                    <th>S. No.</th>
                                    <th>Deductions</th>
                                    <th>Amount</th>
                                </tr>
                            </thead>
                            <tbody>
                                <tr>
                                    <td>1</td>
                                    <td>Insurance</td>
                                    <td>{{ins}} INR</td>
                                </tr>
                                <tr>
                                    <td>2</td>
                                    <td>Professional Tax</td>
                                    <td>{{prot}} INR</td>
                                </tr>
                                <tr>
                                     <td>3</td>
                                    <td>Income Tax</td>

                                    <td>{{inct}} INR</td>
                                </tr>
                                <tr>
                                     <td>4</td>
                                    <td>Provisional Fund</td>

                                    <td>{{provf}} INR</td>
                                </tr>
                                <tr>
                                     <td>5</td>
                                    <td>Voluntary Provisional Fund</td>

                                    <td>{{vprovf}} INR</td>
                                </tr>
                                 <tr>
                                     <td>6</td>
                                    <td>Leave Penalty</td>

                                    <td>{{leapen}} INR</td>
                                </tr>
                            </tbody>
```

```html
            </table>
        </div>
      <hr />
      <div class="ttl-amts">
        <h4>  Total Amount : {{ded}} INR </h4>
      </div>


       <div class="ttl-amts">
            <h3> <strong>Payable Amount : {{net}} INR</strong> </h3>
      </div>
    </div>
  </div>
</body>
</html>
```

Python Backend Code:-

```python
from flask import Flask, render_template, json, request
from flaskext.mysql import MySQL
import werkzeug
import werkzeug.security


mysql = MySQL()
app = Flask(__name__)
app.secret_key = 'some_secret'

# MySQL configurations
app.config['MYSQL_DATABASE_USER'] = 'root'
app.config['MYSQL_DATABASE_PASSWORD'] = 'password'
app.config['MYSQL_DATABASE_DB'] = 'payroll'
app.config['MYSQL_DATABASE_HOST'] = 'localhost'
mysql.init_app(app)


@app.route('/')
def home():
    return render_template('index.html')


@app.route('/index')
def main():
    return render_template('index.html')


@app.route('/showLogin')
def showLogin():
    return render_template('login.html')


@app.route('/showSignUp')
def showSignUp():
    return render_template('signup.html')


@app.route('/showAdminhome')
def showAdminhome():
    return render_template('adminhome.html')


@app.route('/login', methods=['POST', 'GET'])
def login():
    _username = request.form['inputusername']
    _password = request.form['inputPassword']
```

```python
    global usn
    usn = request.form['inputusername']
    print("balle balle " +usn)

    conn = mysql.connect()
    cursor = conn.cursor()
    cursor.execute("SELECT * from Usernames where user_name='" + _username + "' a
nd user_pass='" + _password + "'")
    data = cursor.fetchone()
    if data is not None:

        print('Logged in successfully')
        return json.dumps({'success': True}), 200, {'message': 'Logged in success
fully'}
    else:

        print('Username or password is wrong')
        return json.dumps({'success': False}), 400, {'error': 'not Logged in succ
essfully'}


@app.route('/showProfile')
def showProfile():
    print("Show profile ")
    global usn
    print(usn)
    conn = mysql.connect()
    cursor = conn.cursor()

    cursor.execute("SELECT Employee_ID from Usernames where user_name='" + (usn)
+ "'")
    data = cursor.fetchone()
    key = str(data[0])
    print(key)
    cursor.execute("SELECT * from Employee where Employee_ID='" + str(key) + "'")
    data = cursor.fetchall()
    a, birthdate, fn, mn, ln, des, con = data[0]

    cursor.execute("SELECT * from Salary where Employee_ID='" + str(key) + "'")
    data = cursor.fetchall()
    b, foodall, medicall, basicsal, otcomp, hrall, dall, call, perf = data[0]

    cursor.execute("SELECT * from Deductions where Employee_ID='" + str(key) + "'
")
    data = cursor.fetchall()
    c, ins, prot, inct, provf, vprovf, leapen = data[0]

    cursor.execute("SELECT * from Net_Salary where Employee_ID='" + str(key) + "'
")
```

```python
        data = cursor.fetchall()
        d, gro, ded = data[0]
        print(type(gro) , gro)
        print(type(ded) ,ded)
        net = float(gro) - float(ded)

        return render_template('profile.html', fn=fn, mn=mn, ln=ln, key=key, con=con,
 birthdate=birthdate,
                               basicsal=basicsal, foodall=foodall, medicall=medicall,
 otcomp=otcomp, hrall=hrall, dall=dall,
                               call=call, perf=perf, ins=ins, prot=prot, inct=inct, p
rovf=provf, vprovf=vprovf,
                               leapen=leapen, gro=gro, ded=ded, net=net)


@app.route('/showReport')
def showReport():
        conn = mysql.connect()
        cursor = conn.cursor()
        cursor.execute("SELECT SUM(Insurance) from DEDUCTIONS");
        data = cursor.fetchone()
        sumIns = (int(data[0]))
        cursor.execute("SELECT SUM(Professional_Tax) from DEDUCTIONS");
        data = cursor.fetchone()
        sumPt = (int(data[0]))
        cursor.execute("SELECT SUM(Income_Tax) from DEDUCTIONS");
        data = cursor.fetchone()
        sumIt = (int(data[0]))
        cursor.execute("SELECT SUM(Provisional_Fund) from DEDUCTIONS");
        data = cursor.fetchone()
        sumPf = (int(data[0]))
        bale = 1000000 + sumIns + sumPt + sumIt + sumPf
        return render_template('Report.html', sumIns=sumIns, sumPf=sumPf, sumPt=sumPt
, sumIt=sumIt, fund=1000000, bale=bale)


@app.route('/adminlogin', methods=['POST', 'GET'])
def adminlogin():
        try:
            _username = request.form['inputusername']
            _password = request.form['inputPassword']

            if _username == 'admin' and _password == 'password':
                return json.dumps({'success': True}), 200, {'message': 'Logged in suc
cessfully'}

            else:
                return json.dumps({'success': False}), 400, {'error': 'not Logged in
successfully'}
```

```python
        except Exception as e:
            return json.dumps({'error': str(e)})


@app.route('/signUp', methods=['POST', 'GET'])
def signUp():
    try:
        _fname = request.form['inputFName']
        _mname = request.form['inputMName']
        _lname = request.form['inputLName']
        _design = request.form['inputDesignation']
        _id = request.form['inputID']
        _dob = request.form['inputDOB']
        _contact = request.form['inputContact']
        _basic = request.form['inputBasic']
        _overtime = request.form['inputOvertime']
        _vpf = request.form['inputVPF']
        _medico = request.form['inputMedico']
        _leavepen = request.form['inputLeavepen']
        _insurance = request.form['inputInsurance']
        _peer = request.form['inputPeer']
        _manager = request.form['inputManager']

        _email = request.form['inputEmail']
        _password = request.form['inputPassword']

        basic = float(_basic)
        medico = float(_medico)
        overtime = float(_overtime)
        leavepen = float(_leavepen)
        vpf = float(_vpf)
        insurance = float(_insurance)
        peer = float(_peer)
        manager = float(_manager)

        if medico > (0.5 * basic):
            medico = 0.5 * basic

        _food = 0.05 * basic
        _food = str(_food)
        _hra = 0.4 * basic
        _hra = str(_hra)
        _da = 0.2 * basic
        _da = str(_da)
        _ca = 0.05 * basic
        _ca = str(_ca)
        _mc = medico
        _mc = str(_mc)
```

```python
        _ot = overtime * 0.05 * basic
        _ot = str(_ot)

        _pf = 0.12 * basic
        _pf = str(_pf)
        _pt = 100.0
        _pt = str(_pt)
        _it = 0.1 * basic
        _it = str(_it)
        if leavepen >= 4:
            _lp = leavepen * 0.05 * basic
        else:
            _lp = 0.0
        _lp = str(_lp)
        _vpf = vpf / 100 * basic
        _vpf = str(_vpf)
        _insurance = str(_insurance)

        _pb = 10.0
        rating = (peer + manager) / 2
        if rating >= 5:
            _pb = 0.05 * basic

        if rating >= 7:
            _pb = 0.07 * basic

        if rating >= 8:
            _pb = 0.1 * basic

        _pb = str(_pb)

        _gross = float(_food) + float(_hra) + float(_da) + float(_ca) + float(_mc
) + float(_ot) + float(_pb) + float(
            _basic)
        _gross = str(_gross)

        _deductions = float(_pf) + float(_pt) + float(_it) + float(_lp) + float(_
vpf) + float(_insurance)
        _deductions = str(_deductions)

        # validate the received values
        if _fname and _email and _password:

            # All Good, let's call MySQL

            conn = mysql.connect()
            cursor = conn.cursor()
            # _hashed_password = generate_password_hash(_password)
```

```python
            _hashed_password = werkzeug.security.generate_password_hash(_password
)

            cursor.execute(
                "INSERT into EMPLOYEE(First_Name,Middle_Name,Last_Name,Designatio
n, Employee_ID,Date_of_Birth, Contact_Number)values('" + _fname + "','" + _mname
+ "','" + _lname + "','" + _design + "'," + _id + ",'" + _dob + "'," + _contact +
 ")")
            # cursor.callproc('sp_createUser',(_name,_email,_password))
            data = cursor.fetchall()

            if len(data) is 0:
                conn.commit()
            else:
                return json.dumps({'error': str(data[0])})

            cursor.execute(
                "INSERT into SALARY(Employee_ID,Food_Allowance, Medical_Compensat
ion, Overtime_Compensation, HRA,Dearness_Allowance,Conveyance_Allowance, Basic_Sa
lary, Performance_Bonus)values(" + _id + "," + _food + "," + _mc + "," + _ot + ",
" + _hra + "," + _da + "," + _ca + "," + _basic + "," + _pb + ")")
            data = cursor.fetchall()
            if len(data) is 0:
                conn.commit()
            else:
                return json.dumps({'html': '<span>Enter the required fields</span
>'})

            cursor.execute(
                "INSERT into DEDUCTIONS(Employee_ID,Insurance, Professional_Tax,
Income_Tax, Provisional_Fund, VPF, Leave_Penalty)values(" + _id + "," + _insuranc
e + "," + _pt + "," + _it + "," + _pf + "," + _vpf + "," + _lp + ")")
            data = cursor.fetchall()
            if len(data) is 0:
                conn.commit()
            else:
                return json.dumps({'html': '<span>Enter the required fields</span
>'})

            cursor.execute(
                "INSERT into Net_Salary(Employee_ID,Gross_Salary, Total_Deduction
s)values(" + _id + "," + _gross + "," + _deductions + ")")
            data = cursor.fetchall()
            if len(data) is 0:
                conn.commit()
            else:
                return json.dumps({'html': '<span>Enter the required fields</span
>'})
```

```python
            cursor.execute(
                "INSERT into Usernames(Employee_ID,user_name,user_pass)values(" +
  _id + ",'" + _email + "','" + _password + "')")
            data = cursor.fetchall()
            if len(data) is 0:
                conn.commit()
            else:
                return json.dumps({'html': '<span>Enter the required fields</span
>'})

            cursor.execute("SELECT SUM(Insurance) from DEDUCTIONS");
            data = cursor.fetchone()
            sumIns = (int(data[0]))
            cursor.execute("SELECT SUM(Professional_Tax) from DEDUCTIONS");
            data = cursor.fetchone()
            sumPt = (int(data[0]))
            cursor.execute("SELECT SUM(Income_Tax) from DEDUCTIONS");
            data = cursor.fetchone()
            sumIt = (int(data[0]))
            cursor.execute("SELECT SUM(Provisional_Fund) from DEDUCTIONS");
            data = cursor.fetchone()
            sumPf = (int(data[0]))

            fund = 1000000
            cursor.execute(
                "INSERT INTO Employer(Total_Insurance,Total_Professional_Tax, Tot
al_Provisional_Fund,Total_Income_Tax, Account_Balance) values ('" + str(
                    sumIns) + "','" + str(sumPt) + "','" + str(sumPf) + "','" + s
tr(sumIt) + "'," + str(fund) + ")")

            if len(data) is not 0:
                conn.commit()
                return json.dumps({'message': 'User Added!'})
            else:
                return json.dumps({'html': '<span>Enter the required fields</span
>'})

    except Exception as e:
        return json.dumps({'error': str(e)})
    # finally:
    #   cursor.close()
    #   conn.close()


if __name__ == "__main__":
    app.run(debug=True, port=5002)
```

Automated Teller Machine

A PROJET REPORT SUBMITTED TO

BIDHAN CHANDRA COLLEGE, ASANSOL

AFFILATED TO

KAZI NAZRUL UNIVERSITY

FOR THE PARTIAL FULLFILLMENT FOR QUALIFYING DEGREE OF BACHELOR OF COMPUTER APPLICATIONS

SESSION 2018-2021

SUBMITTED TO:	SUBMITTED BY:
Mr. Rajdip Chatterjee	**Rhythm Kedia**
Mr. Apurba Das	**Roll: 1031801125010012**
Ms. Gitanjali Roy	**Registration no: KNUREG18103000944**
Mr. Subhrajyoti Chakraborty	

1

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First and foremost, we express our gratitude towards Rajdip Sir and Apurba Sir. Their keen interest and encouragement has been of immense help to me. They gave me unending support and helped me in numerous ways from the stage when the idea of the project was conceived. They were always there to hear me and to give advice. They showed me different ways to approach a problem and the need to be persistent to accomplish any goal.

We sincerely feel obliged to them for their unending efforts in guiding me for this project that will be great assistance to me in my future of the subject matter.

Rhythm kedia.

CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the project has been submitted by Rhythm kedia pursuing BCA 6th semester at Bidhan Chandra college, Asansol, under took a project entitled "**Automated Teller Machine**" which is a record of bonafide work carried out by him under my supervision. In my knowledge, this work has not been submitted, either in part or in full, to any other university or institute for the award of degree. He had submitted the report in time. They had done good work and have fulfilled all the requirements.

Project Guide:

Mr. Rajdip Chatterjee

Mr. Apurba Das

Bidhan chandra College

Asansol.

Table of Content

Automated Teller Machine

INTRODUCTION

An automated teller machine (ATM) is an electronic banking outlet that allows customers to complete basic transactions without the aid of a branch representative or teller. Anyone with a credit card or debit card can access most ATMs.

The first ATM appeared in London in 1967, and in less than 50 years, ATMs spread around the globe, securing a presence in every major country and even tiny little island nations such as Kiribati and the Federated States of Micronesia.

The user insert the card into ATM to access the account and process their account transactions. The ATM card has different number of applications and is well worth the small effort required to apply for one. You can reduce the credit card fees. Today consumers use ATM in stores, petrol stations or even at local shops.

This project entitled Automated Teller Machine aims at providing an insight into how to uses ATM. The information provided in this project is just a glimpse of large ocean of information.

ENVIRONMENT

- ## VB.NET

  - Visual Basic .NET (VB.NET) is an object-oriented computer programming language implemented on the .NET Framework. Although it is an evolution of classic Visual Basic language, it is not backwards-compatible with VB6, and any code written in the old version does not compile under VB.NET.
  - Like all other .NET languages, VB.NET has complete support for object-oriented concepts. Everything in VB.NET is an object, including all of the primitive types (Short, Integer, Long, String, Boolean, etc.) and user-defined types, events, and even assemblies. All objects inherits from the base class Object.
  - VB.NET is implemented by Microsoft's .NET framework. Therefore, it has full access to all the libraries in the .Net Framework. It's also possible to run VB.NET programs on Mono, the open-source alternative to .NET, not only under Windows, but even Linux or Mac OSX.

The following reasons make VB.Net a widely used professional language −

- Modern, general purpose.

- Object oriented.

- Component oriented.

- Easy to learn.

- Structured language.

- It produces efficient programs.

- It can be compiled on a variety of computer platforms.

- Part of .Net Framework.

The .Net Framework

The .Net framework is a revolutionary platform that helps you to write the following types of applications –

- Windows applications
- Web applications
- Web services

The .Net framework applications are multi-platform applications. The framework has been designed in such a way that it can be used from any of the following languages: Visual Basic, C#, C++, Jscript, and COBOL, etc.

All these languages can access the framework as well as communicate with each other.

The .Net framework consists of an enormous library of codes used by the client languages like VB.Net. These languages use object-oriented methodology.

Following are some of the components of the .Net framework –

- Common Language Runtime (CLR)
- The .Net Framework Class Library
- Common Language Specification
- Common Type System
- Metadata and Assemblies
- Windows Forms
- ASP.Net and ASP.Net AJAX
- ADO.Net
- Windows Workflow Foundation (WF)
- Windows Presentation Foundation
- Windows Communication Foundation (WCF)
- LINQ

Ms Access (Database)

Microsoft Access is a Database Management System (DBMS) from Microsoft that combines the relational Microsoft Jet Database Engine with a graphical user interface and software development tools. It is a member of the Microsoft Office suite of applications, included in the professional and higher editions.

- Microsoft Access is just one part of Microsoft's overall data management product strategy.

- It stores data in its own format based on the Access Jet Database Engine.

- Like relational databases, Microsoft Access also allows you to link related information easily. For example, customer and order data. However, Access 2016 also complements other database products because it has several powerful connectivity features.

- It can also import or link directly to data stored in other applications and databases.

- As its name implies, Access can work directly with data from other sources, including many popular PC database programs, with many SQL (Structured Query Language) databases on the desktop, on servers, on minicomputers, or on mainframes, and with data stored on Internet or intranet web servers.

- Access can also understand and use a wide variety of other data formats, including many other database file structures.

- You can export data to and import data from word processing files, spreadsheets, or database files directly.

- Access can work with most popular databases that support the Open Database Connectivity (ODBC) standard, including SQL Server, Oracle, and DB2.

- Software developers can use Microsoft Access to develop application software.

Microsoft Access stores information which is called a database. To use MS Access, you will need to follow these four steps –

- **Database Creation** – Create your Microsoft Access database and specify what kind of data you will be storing.

- **Data Input** – after your database is created, the data of every business day can be entered into the Access database.

- **Query** – this is a fancy term to basically describe the process of retrieving information from the database.

- **Report** (optional) – Information from the database is organized in a nice presentation that can be printed in an Access Report.

Architecture

- Access calls anything that can have a name an object. Within an Access desktop database, the main objects are tables, queries, forms, reports, macros, data macros, and modules.

- If you have worked with other database systems on desktop computers, you might have seen the term database used to refer to only those files in which you store data.

- But, in Access, a desktop database (.accdb) also includes all the major objects related to the stored data, including objects you define to automate the use of your data.
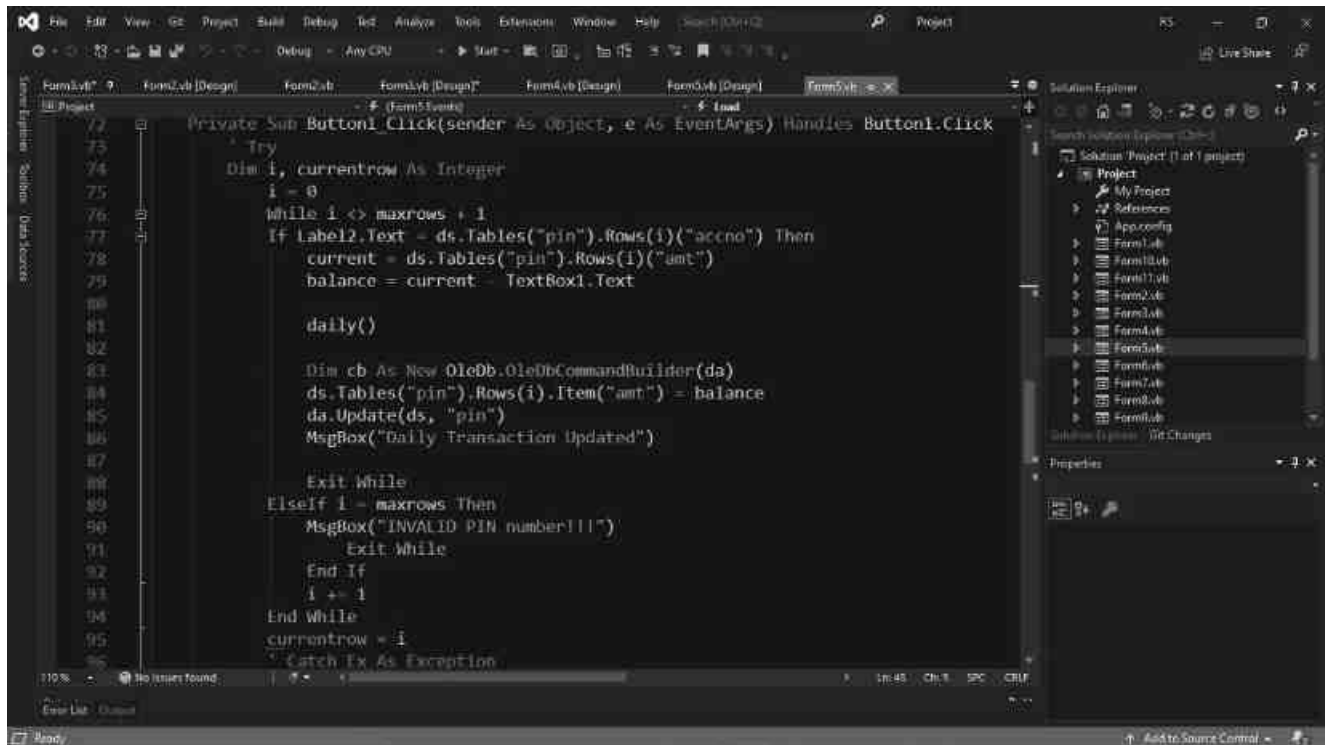
Microsoft Access has the look and feel of other Microsoft Office products as far as its layout and navigational aspects are concerned, but MS Access is a database and, more specifically, a relational database.

- Before MS Access 2003, the file extension was ***.mdb**, but in MS Access 2016 the extension has been changed to ***.accdb** extension.

- Early versions of Access cannot read accdb extensions but MS Access 2007 and later versions can read and change earlier versions of Access.
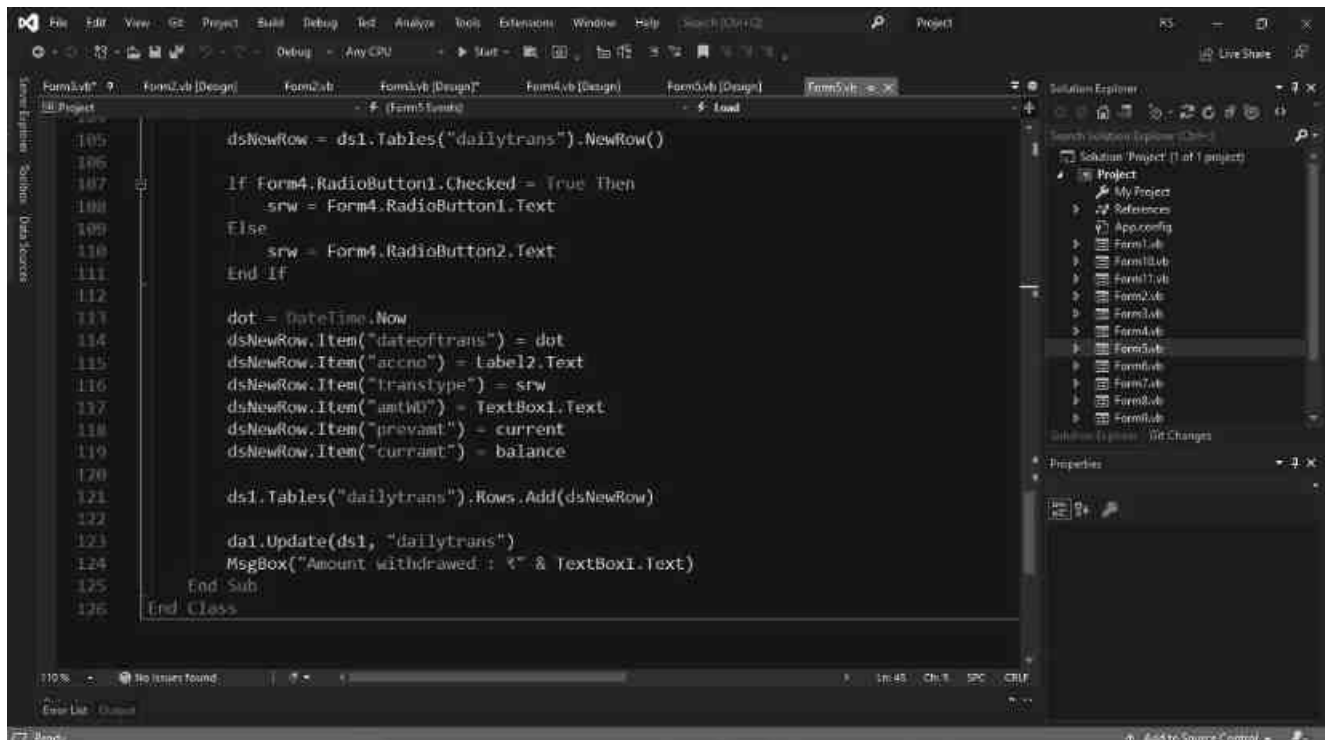
- An Access desktop database (.accdb or .mdb) is a fully functional RDBMS.

- It provides all the data definition, data manipulation, and data control features that you need to manage large volumes of data.

- You can use an Access desktop database (.accdb or .mdb) either as a standalone RDBMS on a single workstation or in a shared client/server mode across a network.

- A desktop database can also act as the data source for data displayed on webpages on your company intranet.

- When you build an application with an Access desktop database, Access is the RDBMS.

CODING

CASH WITHDRAW CODING
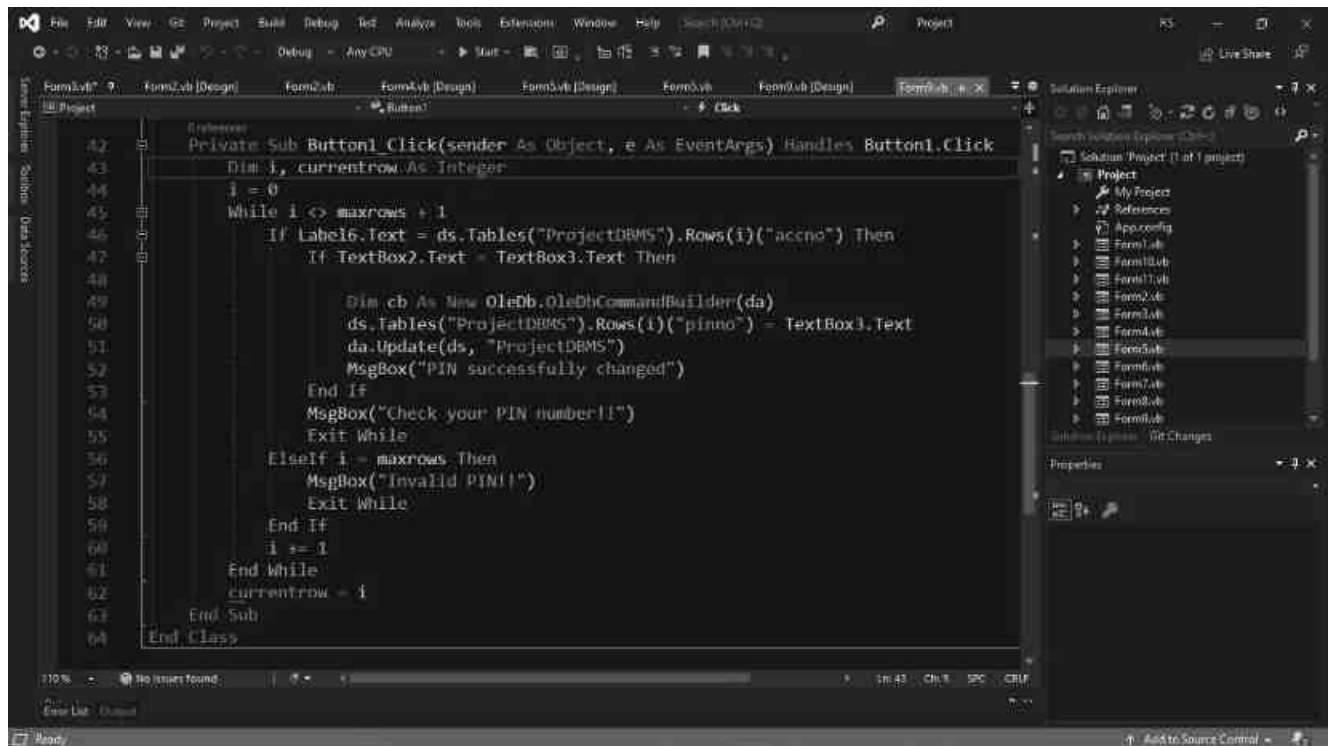
```vb
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    ' Try
    Dim i, currentrow As Integer
    i = 0
    While i <> maxrows + 1
        If Label2.Text = ds.Tables("pin").Rows(i)("accno") Then
            current = ds.Tables("pin").Rows(i)("amt")
            balance = current - TextBox1.Text

            daily()

            Dim cb As New OleDb.OleDbCommandBuilder(da)
            ds.Tables("pin").Rows(i).Item("amt") = balance
            da.Update(ds, "pin")
            MsgBox("Daily Transaction Updated")

            Exit While
        ElseIf i = maxrows Then
            MsgBox("INVALID PIN number!!!")
            Exit While
        End If
        i += 1
    End While
    currentrow = i
    ' Catch Ix As Exception
```

```vb
        dsNewRow = ds1.Tables("dailytrans").NewRow()

        If Form4.RadioButton1.Checked = True Then
            srw = Form4.RadioButton1.Text
        Else
            srw = Form4.RadioButton2.Text
        End If

        dot = DateTime.Now
        dsNewRow.Item("dateoftrans") = dot
        dsNewRow.Item("accno") = Label2.Text
        dsNewRow.Item("transtype") = srw
        dsNewRow.Item("amtWD") = TextBox1.Text
        dsNewRow.Item("prevamt") = current
        dsNewRow.Item("curramt") = balance

        ds1.Tables("dailytrans").Rows.Add(dsNewRow)

        da1.Update(ds1, "dailytrans")
        MsgBox("Amount withdrawed : ₹" & TextBox1.Text)
    End Sub
End Class
```

PIN Change Coding

```vb
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    Dim i, currentrow As Integer
    i = 0
    While i <> maxrows + 1
        If Label6.Text = ds.Tables("ProjectDBMS").Rows(i)("accno") Then
            If TextBox2.Text = TextBox3.Text Then

                Dim cb As New OleDb.OleDbCommandBuilder(da)
                ds.Tables("ProjectDBMS").Rows(i)("pinno") = TextBox3.Text
                da.Update(ds, "ProjectDBMS")
                MsgBox("PIN successfully changed")
            End If
            MsgBox("Check your PIN number!!")
            Exit While
        ElseIf i = maxrows Then
            MsgBox("Invalid PIN!!")
            Exit While
        End If
        i += 1
    End While
    currentrow = i
End Sub
End Class
```

Fund Transfer Coding

```vb
    While i <> maxrows + 1
        If Label6.Text = ds.Tables("ProjectDBMS").Rows(i)("accno") Then
            current = ds.Tables("ProjectDBMS").Rows(i)("amt")
            balance = current - TextBox2.Text
            Dim cb As New OleDb.OleDbCommandBuilder(da)
            ds.Tables("ProjectDBMS").Rows(i).Item("amt") = balance
            da.Update(ds, "ProjectDBMS")
            MsgBox("Fund Transfer Successful")
            MsgBox("Data updated")

            Exit While
        ElseIf i = maxrows Then
            MsgBox("INVALID PIN number!!!")
            Exit While
        End If
        i += 1
        If TextBox1.Text = ds.Tables("ProjectDBMS").Rows(i)("accno") Then
            Dim avail, newamt As Integer
            avail = ds.Tables("ProjectDBMS").Rows(i)("amt")
            newamt = TextBox2.Text + avail
            Dim cb As New OleDb.OleDbCommandBuilder(da)
            ds.Tables("ProjectDBMS").Rows(i)("amt") = newamt
            da.Update(ds, "ProjectDBMS")
        End If
    End While
```

REQUIREMENT

SOFTWARE   REQUIREMENTS

- Environment: Visual Studio .NET 2019
- Back End: Microsoft Access 2016
- Operating System: Windows 10
- Language: Visual Basic .NET
- .NET Framework: Version 4.6

HARDWARE REQUIREMENTS

The resulting executable is very small app and requires a low configuration, basically the same as running the Visual Studio Community 2019.

PROCESSOR

- **Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz   2.50 GH**

RAM

- 8 GB

HARD DISK

- 1 TB

DISPLAY

- Minimum: 1280 x 720 16M colors
- Recommended: 1366 x 768 High Color – 16M

KEYBOARD

- Standard

KEYSMOUSE
- 3 Buttons

DATA FLOW DIAGRAM

START

Login Window ← Invalid

Main Menu

Withdraw | Balance Enquiry | Pin Change | Fast Cash | Mini-Statement | Transfer

Transaction Type

Choose Bank

Cash Withdraw

Fund Transfer

Home
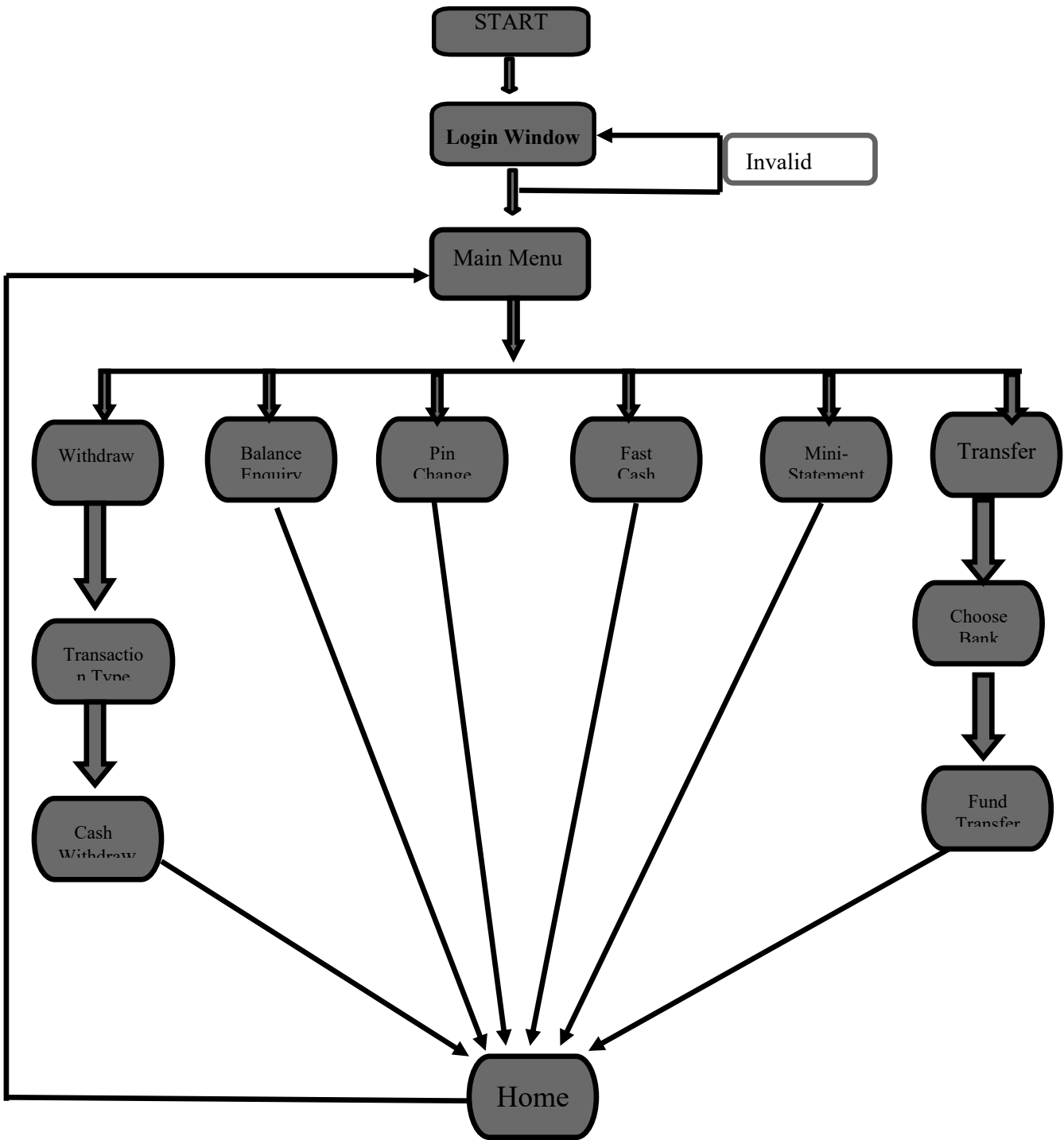
SCREENSHOTS

Login Window
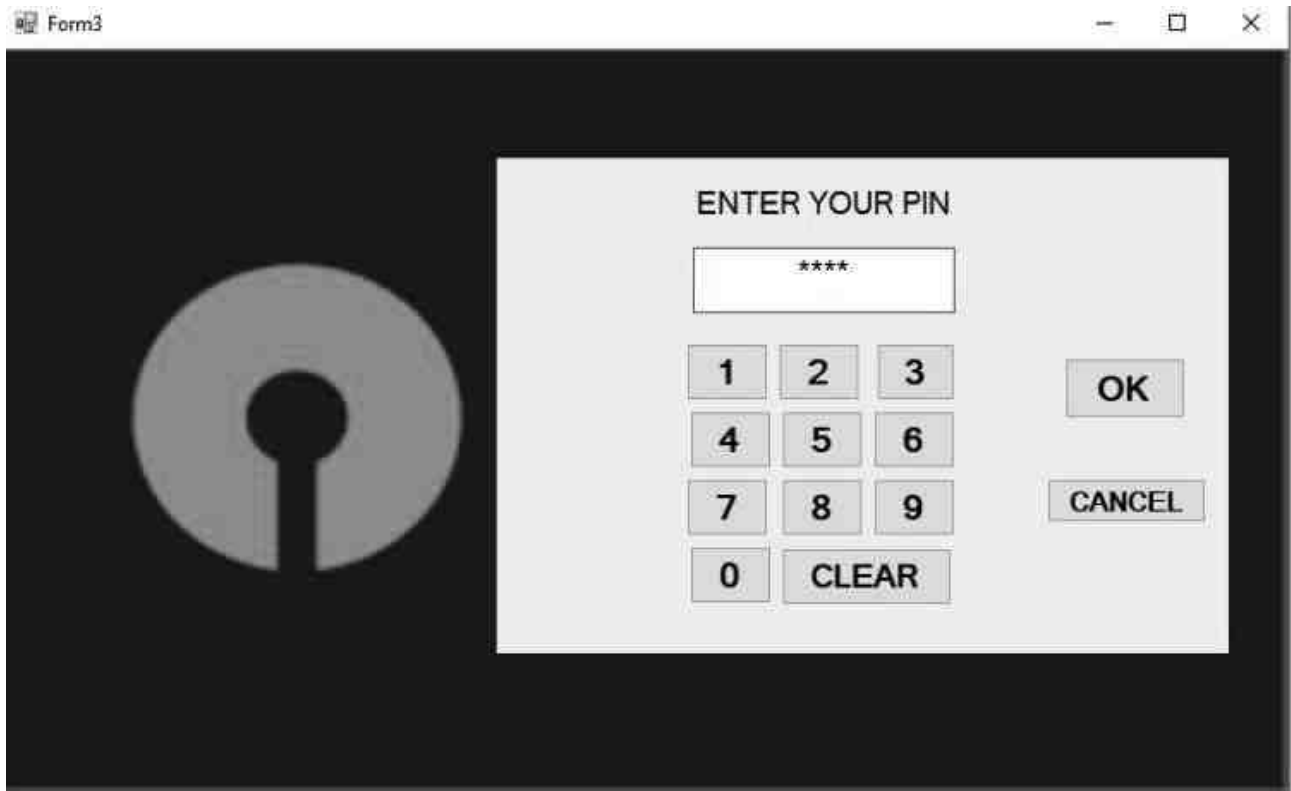
- Here user need to enter his/her *Pin number* which is register in the *database*.
- Then user clicks on *OK* button to enter the *Transaction Window*.
- Here user can also *Cancel* the window by clicking on the *Cancel Button*.

MAIN MENU Window
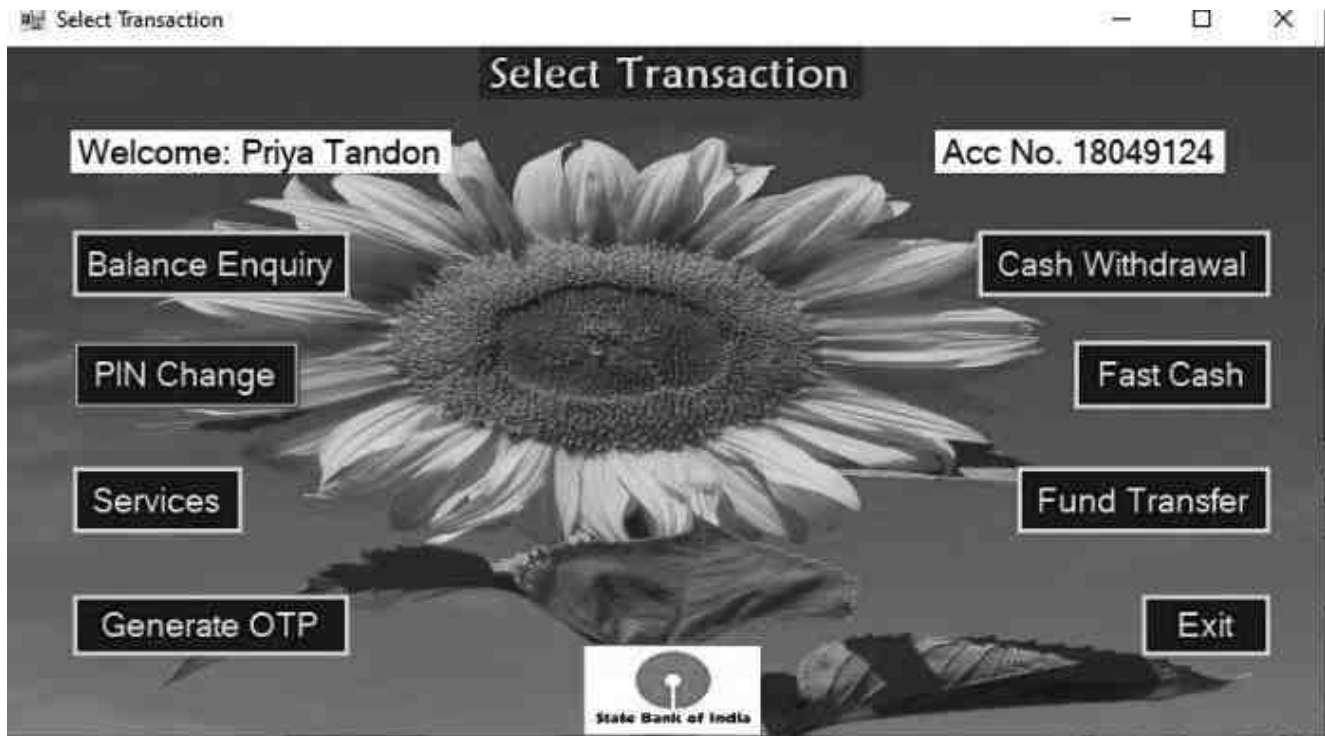
- Here user can select the various transaction from the option given.
- If user selects the **Balance Enquiry** option then he/she will be directed to the **Balance Inquiry** Window.
- If user selects the **Pin Change** option then he/she will be directed to the **Pin Change Window**.
- If user selects the Fast Cash option then he/she will be directed to the **Fast Cash Window.**
- If user selects the Fund Transfer option then he/she will be directed to the Fund Transfer Window.
- If user selects the Withdraw option then he/she will be directed to the **Cash Withdraw Window.**
- But if user clicks on the **Exit** button then he/she will redirected to the **Login Window**.

Change Pin Window

- Here, user first Enter Old PIN in order to change the PIN.

- Next Enter New and Confirm Pin.

- After clicking on "OK" user's PIN successfully changes.

- Here if user clicks on *Main Menu* button he/she will redirected back to *the Transaction Window* (Main Menu).

Money Transfer Window

- Here user can Transfer Money in his/her account by entering his/her *account number* and the *amount* to be transferred.
- Then he/she can click on Confirm button which deposits the specified amount in the account of the user.
- Here also user can click on *Main Menu* which will redirect's him/her to the *Transaction Window* (Main Menu).

Balance Enquiry Window
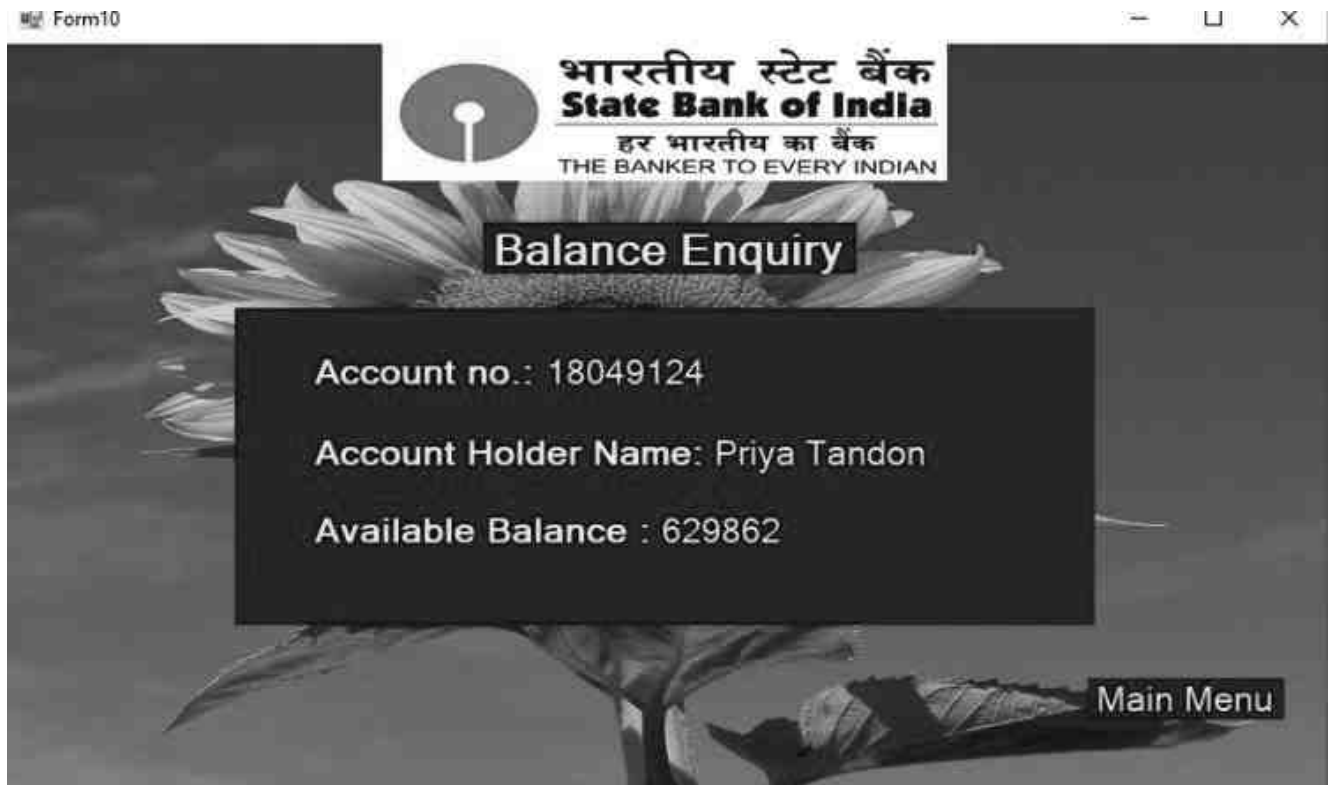
- Available Balance of the opened account no. is shown here along with Account holder's name.
- Here too user can click on **Main Menu** which will redirect's him/her to the **Transaction Window** (Menu).

Cash Withdrawal Window
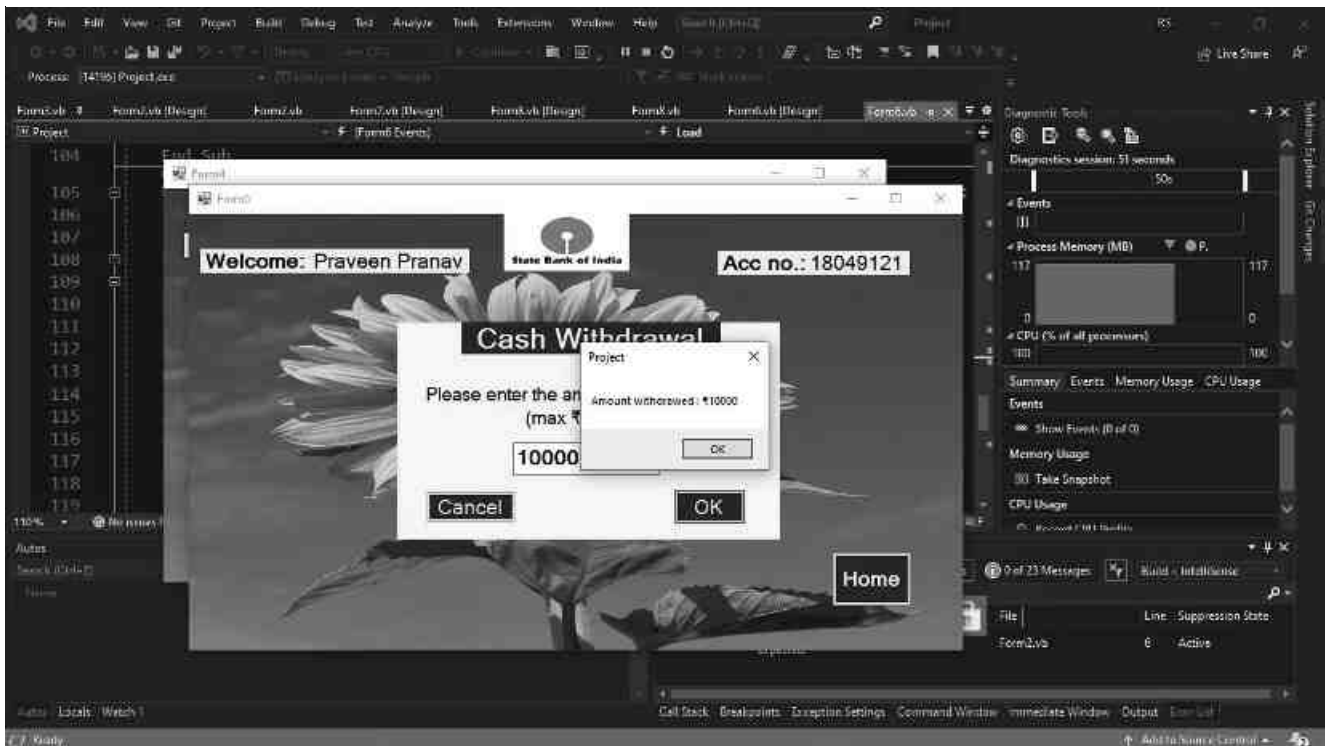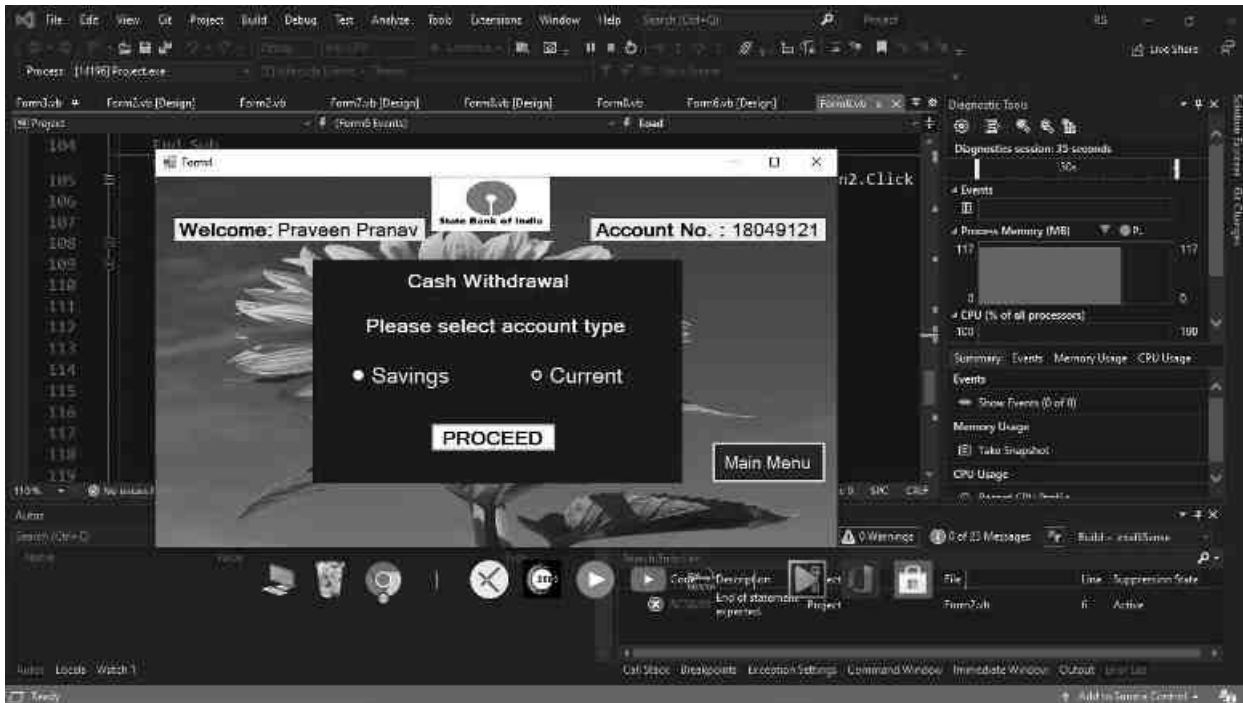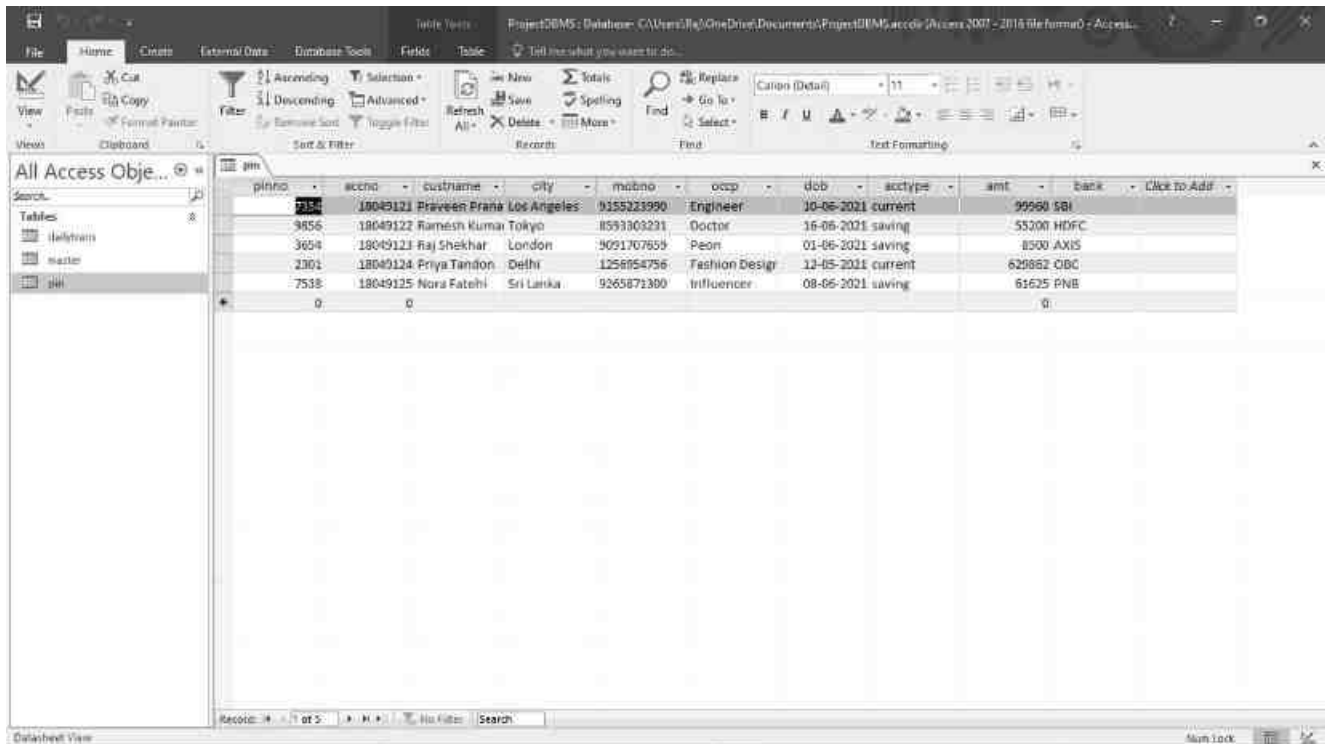
- Here the ***account name and account number*** of the user is shown.
- After choosing account type, user selects the Proceed option then he/she will directed to the Final Cash Withdraw Window.
- Here user can ***withdraw*** the amount by entering his/her ***amount*** to be withdrawn.
- Then he/she can click on ***Ok or Cancel*** button to proceed with the transaction or Cancel it respectively.
- Here user can click on ***Home Link*** which will redirect's him/her to the ***Transaction Window*** (Main Menu).

Logout Dialog Box
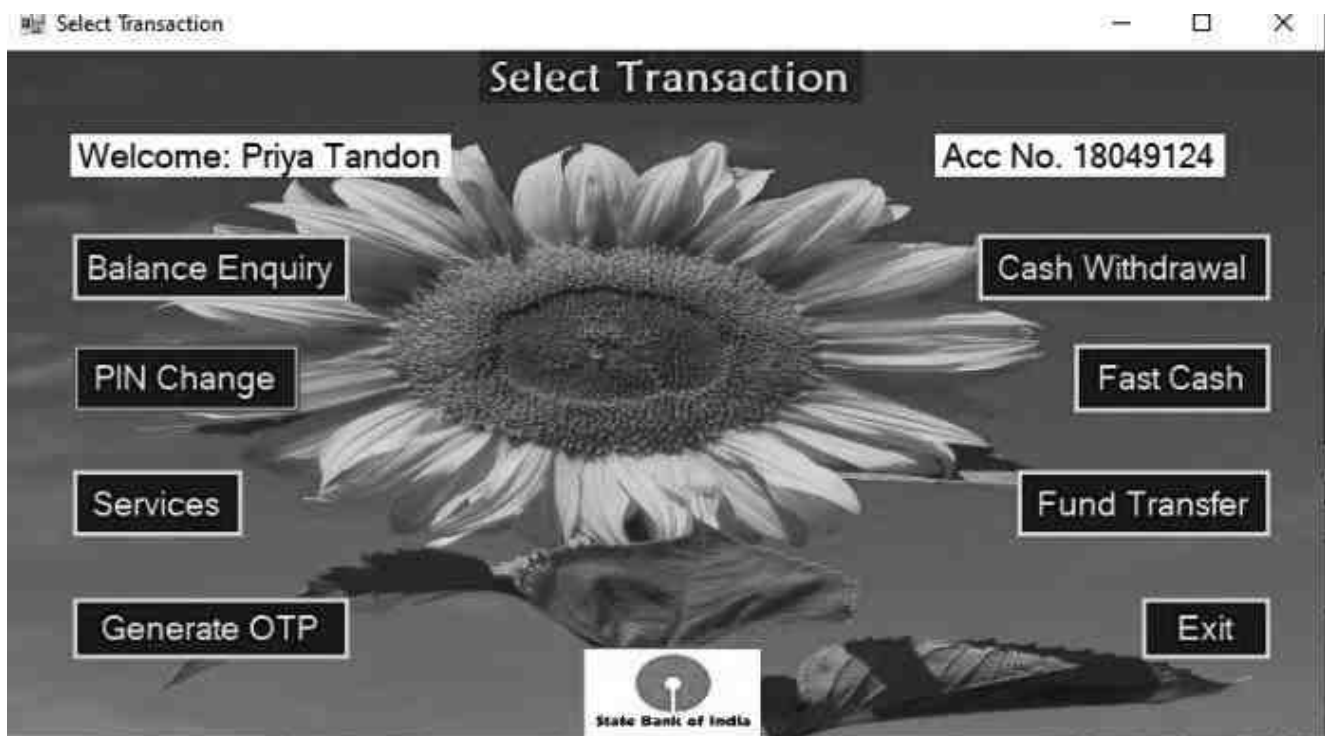
- When user clicks on ***EXIT*** button he/she will redirected to the ***Log-In*** Window.

Database File (Ms Access 2016)

- This is the database file which serves as the **Back End** for this Project (ATM Simulator).
- This File is compatible with **Ms Access 2016** of Ms Access.

SCOPE OF THE PROJECT

Enhanced with new operating systems, ATM's are becoming more powerful and diverse , evolving from simple money dispense into EBK's (Electronic banking kiosks) which pair traditional ATM functions with a range of other capabilities with EBK, customers can conduct virtually all their banking without ever visiting a branch. This include check cashing, receiving money in desired denominations and even interacting with tellers via video sessions.

Faced with new options costumers have less reason to visit an actual branch, especially since they are able to conduct transitions at an ATM, online or using a mobile device. New ATM's are also a great way for smaller community bank and credit unions since they increase physical presence without opening new branches.

There are currently over 1.3 million ATM's in operation around the world , with this set to surpass four million by 2020. Despite the growth in online , mobile and telephone banking, ATM is still seen in many instances as the most common self service channel for consumers to interact with their bank. Cash machines globally offer an incredible diverse range of non cash transactions too. The ATM install base will get higher. There are lot of evidence to suggest the ATM will remain a popular self service banking channel for years to come.

<u>CONCLUSION</u>

The aim of the ATM Simulation System project is to build a VB.Net based ATM (Automated Teller Machine) Simulation System. The introduction of ATM's by various banks have brought about freedom from the interminable queues in front of withdrawal counters at banks. This ATM Simulation System requires the constant updating of records between the bank servers and a spread out network of ATM's.

All good things come to an end so does our ATM project. We are done with the basic processes for our ATM. So, we have two unique features of ATM which helps in reducing the complex nature of the bank system. It provides easy access to the cash in our account. To protect our ATM from theft, it's important to implement basic precautions such as complex passwords, safeguarding the PIN and only conducting the online and mobile banking through secure internet conditions.

- **<u>Goal Achieved</u>:** The Project is able to provide the interface to the users so that he can replicate his desired data.
- **<u>User Friendliness</u> :** Though the most part of the project is supposed to act in the background, effort have been made to make the foreground interaction with user as smooth as possible.

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