



JAMAL MOHAMED COLLEGE (AUTONOMOUS)

(Affiliated to Bharathidasan University)

TIRUCHIRAPPALLI – 620 020

NAAC - SSR IV CYCLE

Criterion II Teaching-Learning and Evaluation

2.3 Teaching – Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences

Activity Based Courses

ENVIRONMENT STUDIES



Since 1951

JAMAL MOHAMED COLLEGE (Autonomous)

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ENVIRONMENTAL STUDIES

Instruction: 05 Hrs

Activity: 25 Hrs

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCN3AE2	Ability Enhancement Course – II	Environmental Studies	2	2	100	100	-

Course Outcomes:

At the end of the course, students will be able to

1. Realize the multidisciplinary nature of environment.
2. Justify the need to preserve and conserve biological diversity.
3. Analyze various natural resources available for sustaining human life.
4. Create opportunities for alternative ways of energy harvesting.
5. Produce wealth from waste by employing the concept of natural recycling.

Unit I: The multidisciplinary nature of environmental studies

6 Hours

Definition, scope, importance, awareness and its consequences on the planet.

Unit II: Biodiversity

6 Hours

Introduction and conservation values. Biodiversity levels, Hot spots, common flora and fauna in India, endangered and threatened species of India. *In situ* and *Ex situ* conservation of biological resources.

Unit III: Natural resources

6 Hours

Forest, water, marine, minerals, food, land and energy resources. Alternative energy – Bio energy, composting energy biomass characteristics, biomass and their uses.

Unit IV: Energy and Environment

6 Hours

Basics principles, applications, non-renewable and renewable and renewable energy resources significance of wind, solar, hydal, tidal, waves, ocean thermal energy and geothermal energy.

Unit V: Waste to wealth

6 Hours

Energy from waste, value added products from waste, fly ash utilization and disposal of garbage, solid waste management in urban and rural areas, Swachh Bharat Abhiyan, recent advances in solid waste management, modern techniques in rain water harvesting and utilization.



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Text books:

1. Asthana DK and Meera A, Environmental studies, 2nd Edition, Chand and Company Pvt Ltd, New Delhi, India, 2012.
2. Arumugam N and Kumaresan V, Environmental studies, 4th Edition, Saras Publication, Nagercoil, Tamil Nadu, India, 2014.

Activity I

- Assignments – Titles on Environmental awareness to be identified by teachers from the following (scripts not less than 20 pages)
- Elocution – (Speech on “Environment beauty is the fundamental duty” of citizen of the country for 3 to 5 minutes)
- Environment issues – TV, Newspaper, Radio and Medias messages - Discussion
- Case Studies/Field Visit/Highlighting day today environmental issues seen or heard
- Debating/Report Submission – Regarding environment issues in the study period

Activity II

Environmental awareness through charts, displays, models and video documentation.

Celebrating Nationally Important Environmental Days

- World wild life day – 3rd March
- Environment day – 5th June
- International forest day – 21st March
- Plants day – 26th May
- Earth / Planet day – 22nd April
- National Science Day – 28th February
- World Water Day – 22nd March
- World Meteorological Day – 23rd March
- World Health Day – 7th April
- World Heritage Day – 18th April
- Earth Day – 22nd April



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Activity III

- Discipline specific activities

EVALUATION COMPONENT:

Component I: (25 Marks)

Assignment – 5 marks + Elocution – 5 marks + Debating – 5 marks + Case Study – 10 marks = 25 marks

Component II: (25 Marks)

Celebration of National days – submission of report/presentation/video documenting/ preparation for two events, each event 12.5 marks

Component III: (30 Marks)

Execution of Discipline specific activities and its document submission Activity – 20 marks + Document submission – 10 marks = 30 marks

Component IV: (20 Marks)

Multiple choice questions – 20 marks



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Unit I: The multidisciplinary nature of environmental studies Definition, scope, importance, awareness and its consequences on the planet.

Environmental Science

Word environment is derived from the French word '*environner*' which means to 'encircle or surround'. Environment is 'a word which describes, "the Social, Cultural and Physical conditions that surround, affect and influence the survival, growth and development of people, animals and plants"'.

This broad definition includes *the natural world and the technological environment as well as the cultural and social contexts that shape human lives*.

It includes both living and nonliving that affect an individual organism or population at any point in the life cycle.

Multidisciplinary Nature of Environmental Studies

Environmental studies is a multi-disciplinary programme created to promote the study of our natural surroundings. Since it includes all disciplinary such as agriculture, chemical, physical and life and earth science, commerce, climatology, economics, humanities laws, politics, policy studies, mathematics, meteorology, sociology, laws, engineering and Mathematics.

- ❖ Life sciences including botany, zoology, microbiology, genetics, biochemistry, biotechnology help in understanding the biotic components and their interactions.
- ❖ The physical and chemical structure of the biotic components and energy transfer and flow are understood with the help of basic concept of physics, chemistry, atmospheric science and oceanography.
- ❖ Mathematics, statistics and computer science serve as effective tools in environmental modelling and management.

Scope of environment

It consists of four segments as under:

1. **Atmosphere:** The atmosphere implies the protective blanket of gases composed of nitrogen and oxygen. Besides, argon, carbon dioxide and trace gases surrounding the earth.
2. **Hydrosphere:** Various water bodies present on the earth.
3. **Lithosphere:** Contains various types of soils and rocks on the earth.
4. **Biosphere:** Composed of all living organisms and their interactions with the environment.



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Scope of the environmental studies is broad based and it encompasses a large number of areas and aspects broadly listed below.

- a. Natural resources—their conservation and management
- b. Ecology and biodiversity
- c. Environmental pollution and control
- d. Social issues in relation to development and environment
- e. Human population and environment

These scope focused on

- ❖ Studying the interrelationships among biotic and abiotic components for sustainable human ecosystem.
- ❖ Managing and maintaining of forests and wild life under natural resources conservation
- ❖ It deals with the study of flow of energy and materials in the environment.
- ❖ Carrying out impact analysis and environmental auditing for the further catastrophic activities.
- ❖ Developing methods to curb the pollution urban and industrial pollution and manage waste effectively.
- ❖ Protection of environment from the potentially deleterious effects of human activity and improving the environmental quality for the health and well beings of humans.
- ❖ Stopping the use of biological and nuclear weapons for destruction of human race.
- ❖ Development of policies and plans for management of natural disasters and mitigate climate change events.

Importance of Environmental Studies

1. Understand the influence of Environmental factors on activities of all organisms.
2. It aims to protect bio diversity and utilize them sustainably.
3. It enlighten us on the importance of protection and conservation of our natural resources, indiscriminate release of pollution into the environment.
4. It help to achieve sustainable development and understand the relationship between development and the environment.



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5. It is a subject that is actually global in nature.
6. Deals with the analysis of the processes in water, air, land, soil, and organism which leads to pollution (or) environment degradation.
7. Environmental studies helps maintain ecological balance by providing a basic operating knowledge of environmental system and processes.
8. The concepts can be applied to the study of agriculture and the design of sustainable production system.
9. It also provide knowledge about the development and utilization of energy resources and the role of public policy.
10. It examines the scientific basic for environmental and social concerns about our present energy needs, global climate changes, toxic emission and waste disposal.
11. Deals with the most important issues like safe and clean drinking water, hygienic living conditions, clean and fresh air, and healthy food for man and for development.

Awareness

Public awareness is very essential to help, understand pros and cons of environmental problems.

- i. **Growing Population:** It puts considerable pressure on its natural resources and reduces the gains of development. Hence, the greatest challenge before us is to limit the population growth.
- ii. **Poverty alleviation:** The poverty and environmental degradation are mixed with one another. The vast majority of people are directly dependent on the nature resources for their basic needs of food, fuel shelter and fodder.
- iii. **Environment degradation** has adversely affected the poor who depend upon the resources of their immediate surroundings. Thus, the challenge of poverty and the challenge of environment degradation are two facets of the same challenge.
- iv. **Agricultural Growth:** Massive rainfall or drought due to climate change activities, monoculture cropping system stable agriculture productivity is retarded.
- v. **Need to increase Ground water:** Both surface and Ground water have polluted due to agrochemicals and industrial effluents. Hence strategies for conservation of water, provision of safe drinking water and keeping water bodies clean should be developed.



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- vi. **Development of forest and restoration of degraded land:** Monitoring and management of forest both animal and plants and restoration of degraded lands with native plants and implement afforestation programs for increasing the forest cover.
- vii. **Air and water Pollution:** Reduce the pollutants from urban residents, automobile and industry and converting waste to wealth.
- viii. **Production of Plastic Goods-** Currently our society creates a great deal of waste and much of that waste consists of plastic. According to the Environmental Protection Agency (EPA) in 2010 alone 31 million tons of plastic waste was created. This waste ends up all over the globe in both land and water. So utilization of plastic goods should be reduced.
- ix. **Environmental Laws:** Understand some important laws related to environmental protection and wildlife a) The Environment (Protection) Act, 1986; b) The Forest (Conservation) Act, 1980; c) The Wildlife Protection Act, 1972; d) Water (Prevention and Control of Pollution) Act, 1974; e) Air (Prevention and Control of Pollution) Act, 1981 and f) The Indian Forest Act, 1927.

Involve yourself and Creating Public Awareness

- ❖ Create awareness among the above said topics, this can only be made possible through mass public awareness, Mass media such as newspapers, radio, television, strongly influence public opinion
- ❖ Follow the environmental ethical principles no harm to the environment and utilize the resource in sustainable manner.
- ❖ Practice and promote good civic sense such as no spitting or tobacco chewing, no throwing garbage on the road, no smoking in public places, no urinating or defecating in public places.
- ❖ Practice and promote issues such as saving paper, saving water, reducing use of plastics, practicing the 5Rs Principle of Refuse, Reduce, Reuse, Recycle and Recover.
- ❖ Take part in events organised on World Environment Day, Wildlife Week, etc.
- ❖ Enjoy beauty of nature encompasses every aspect of the living and non-living part of our earth.
- ❖ Develop visual arts and post poets to create awareness that vitalize the lives in the earth.



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Unit II: Biodiversity Introduction and conservation values. Biodiversity levels, Hot spots, common flora and fauna in India, endangered and threatened species of India. In situ and Ex situ conservation of biological resources.

Biological diversity' means that the *variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems.*

Biodiversity plays an integral role in the way ecosystems work and in the benefits they provide.

Some of the benefits of biodiversity include:

- Forests are the backbone for Biodiversity.
- Forest are considered as lungs of the country or world.
- Regulating elements such as climate, water quality, disease, and pollination
- Provisioning resources such as food, clean water, industrial raw materials, and genetic resources
- Cultural promotion such as recreational, aesthetics, spiritual benefits

Major values of biodiversity are as follows

1. **Environmental value:** includes different types ecosystem process and identifying its services
2. **Social value:** includes aesthetic, recreational, cultural and spiritual values.
3. **Ecosystem Services value:** Nutrient recycling, pollination, maintenance of habitats of all organisms.
4. **Economic value:** Economic potential in terms of food, fodder, medicinal use.
5. **Consumptive use value:** Natural products, fodder, timber and fuel wood.
6. **Productive use value:** Crop varieties and its products that are commercially harvested and marketed
7. **Ethical and Moral value:** It is based on the importance of protecting all forms of life
8. **Aesthetic value:** Beauty of a landscape and for recreation value.

Levels of Biodiversity

- i. **Genetic level:** It is the amount of variation at genetic level within a species or population.
- ii. **Species level:** It is the number and abundance of different species that occupy a location



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iii. **Ecological or Ecosystem level:** It includes the variation in both terrestrial and aquatic ecosystems.

A healthy biodiversity offers many valuable services as follows.

- Forests regulate the amount of carbon dioxide in the air by releasing oxygen as a by-product during photosynthesis control rainfall and soil erosion.
- Protects water resources from being depleted, contaminated or polluted.
- Helps in nutrient storage and recycling.
- Helps check pollution and contributes climate stability.
- Helps an ecosystem in recovery from unpredictable events.
- Provides biological resources such as food, medicinal resources, and pharmaceutical drugs, wood products, ornamental plants, breeding stocks, etc.
- Provides recreation and tourism facilities.
- Helps in research, education, and monitoring.

What is Biodiversity Hotspots?

A biodiversity hotspot is a biogeographic region with significant levels of biodiversity that is threatened by human habitation.

Biodiversity hotspot, a region must meet following two strict criteria:

- Contain at least 1,500 species of vascular plants found nowhere else on Earth (known as "endemic" species).
- Have lost at least 70 percent of its primary native vegetation.

There are currently 36 recognized biodiversity hotspots on earth among them four biodiversity hotspots are present in Indian region which includes

- a. **The Western Ghats:** These hills are present along the western edge of peninsular India.
- b. **The Himalayas:** This region comprises of Bhutan, Northeast India, and Southern, Central and Eastern Nepal.
- c. **Indo-Burma Region :** This region consists of numerous countries including North-Eastern India (to the south of the Brahmaputra River), Myanmar, and China's Yunnan provinces southern part, Lao People's Democratic Republic, Vietnam, Cambodia, and Thailand

- d. **Sundaland:** This region lies in South-East Asia and includes Thailand, Singapore, Indonesia, Brunei, and Malaysia. The Nicobar Islands represent India.



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Flora and Fauna of India

The flora and fauna in India are diverse with a variety of plants and animal varieties. Indian flora that includes the Alpines, temperate forests, deciduous forests, evergreen forests, oaks, rhododendrons, pine, spruce, deodar, laurels, maples, bamboos and tall grasses. Botanical Survey of India is an organization collect, classify and describe flora of India.

The popular fauna of India includes 500 different varieties of mammals, 2000 species of birds, 30.000 types of insects and several varieties of fish, amphibians and reptiles. Elephants, Royal Bengal Tiger, rhinos, bison, lions are some common fauna found in the country. Zoological Survey of India is an organization collect, classify and describe the fauna of India.

Other than Government agencies several academic institutes and NGOs are also involving for collection of flora and fauna

Endangered and Threatened species

An endangered or threatened species is a native species that faces a significant risk of extinction in the near future throughout all or a significant portion of its range.

Such species may be declining in number due to threats such as habitat destruction, climate change, or pressure from invasive plants and animal species.

Plants (Botanical Name)	Animals (Species name in bracket)
<i>Agasthiyamalaia pauciflora</i>	Nilgiri tahr (<i>Nilgiritragus hylocrius</i>)
<i>Aglaia malabarica</i>	Asiatic lion (<i>Panthera leo persica</i>)
<i>Berberis nilghiriensis</i>	Bengal tiger (<i>Panthera tigris tigris</i>)
<i>Garcinia travancorica</i>	Red panda (<i>Ailurus fulgens</i>)
<i>Mangifera austro-indica</i>	Lion-tailed macaque (<i>Macaca silenus</i>)
<i>Memecylon subramanii</i>	Indian rhinoceros (<i>Rhinoceros unicornis</i>)
<i>Myristica andamanica</i>	Snow leopard (<i>Uncia uncia</i>)
<i>Myristica malabarica</i>	Sloth Bear (<i>Melursus ursinus</i>)
<i>Syzygium andamanicum</i>	Steppe eagle (<i>Aquila nipalensis</i>)
<i>Syzygium courtallense</i>	Bengal florican (<i>Houbaropsis bengalensis</i>)
<i>Syzygium travancoricum</i>	Himalayan quail (<i>Ophrysia superciliosa</i>)
<i>Tribulus rajasthanensis</i>	Jerdon's courser (<i>Rhinoptilus bitorquatus</i>)



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Conservation of Bioresources

It is the care and protection of these resources so that they can persist for future generations. It includes maintaining diversity of species, genes, and ecosystems, as well as functions of the environment, such as nutrient cycling.

There are two methods of conservation

- i) *In situ* Conservation (Inside the Native region such as Forest)
- ii) *Ex situ* Conservation (Outside the Native region such as gardens, zoos, laboratory condition)

In situ Conservation is one of the methods of the conservation of genetic resources in natural populations of plant or animal species. It means the conservation of biodiversity in their natural habitats itself. By implementing this establish a Protected Area networks (PAs), with appropriate management practices, corridors to link fragments restore degraded habitats within and outside.

In India following types of natural habitats are being maintained

- i) **National parks** : Gir National Park (Gujarat), Nanda Devi National Park (Uttarakhand); Kaziranga National Park (Assam); Silent Valley National Park; Sundarbans National Park (West Bengal).
- ii) **Biosphere reserves**: Great Nicobar (Andaman and Nicobar Islands) Gulf of Mannar Biosphere Reserve; Nilgiri Biosphere Reserve.
- iii) **Sanctuaries** : Mudumalai Wildlife Sanctuary (Tamil Nadu), Mount Abu Wildlife Sanctuary (Rajasthan) ; Anamalai Wildlife Sanctuary (Indira Gandhi Wildlife Sanctuary and National Park) (Tamil Nadu).

India has over 600 protected area which includes over 90 national parks, over 500 animals sanctuaries and 15 biosphere Reserves.

Advantages of in-situ conservation

1. The flora and fauna live in natural habitats without human interference.
2. The life cycles of the organisms and their evolution progresses in a natural way.
3. *In situ* conservation provides the required green cover and its associated benefits to our environment.



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4. It is less expensive and easy to manage.
5. The interests of the indigenous people are also protected.

Ex-situ conservation is the relocation of endangered or rare species from their natural habitats to protected areas equipped for their protection and preservation. It means the conservation of biological diversity outside their natural areas. Established botanical and zoological gardens, conservation stands; banks of germplasm, pollen, seed, seedling, tissue culture, gene, and DNA, etc.

- i) **Seed gene bank:** Seeds preserved under controlled conditions (minus temperature) remain viable for long durations of time.
- ii) **Gene bank:** Genetic variability also is preserved by gene bank under normal growing conditions.
- iii) **Cryopreservation:** Preservation of biological specimens at very low temperature (-196°C) in liquid nitrogen
- iv) **Tissue culture bank:** Cryopreservation of disease free meristems and culture of excised roots and shoots are maintained.
- v) **Long term captive breeding:** capture, maintenance and captive breeding on long term basis of individuals of an endangered species.
- vi) **Botanical gardens:** A botanical garden is a place where both native and exotic plants are grown for educational and research purposes.
- vii) **Animal Translocation:** Release of animals in a new locality which come from anywhere



Unit III: Natural resources - Forest, water, marine, minerals, food, land and energy resources.
Alternative energy – Bio energy, composting energy biomass characteristics, biomass and their uses.

Natural resources can be defined as the resources that exist (on the planet) independent of human actions. Common examples of natural resources include air, sunlight, water, soil, rocks, plants, animals and fossil fuels.

There are two types of resources

- i) **Inexhaustible Resources:** The resources which cannot be exhausted by human consumption are called inexhaustible resources. These include energy sources like solar radiation, wind hydro and tidal power and substances like sand, clay, air, water in oceans, etc.
- ii) **Exhaustible Resources:** which are available in limited quantities and are going to be exhausted as a result of continuous use. These are called exhaustible resources. For example, the stock of coal in the earth is limited

Most Important Natural Resources are:

1. **Air:** Clean air is important for all the plants, animals, humans to survive on this planet. So, it is necessary to take measures to reduce air pollution.
2. **Water:** 70% of the Earth is covered in water and only 2 % of that is freshwater. Initiative to educate and regulate the use of water should be taken.
3. **Soil:** Soil is composed of various particles and nutrients. It helps plants to grow.
4. **Iron:** It is made from silica and is used to build strong weapons, transportation and buildings
5. **Forests:** As the population increases, the demand for housing and construction projects also increases. Forests provide clean air and preserve the ecology of the world.

Based on the availability are two types of natural resources:

1. **Renewable:** resources that are available in infinite quantity and can be used repeatedly are called renewable resources. Example: Forest, wind, water, etc.
2. **Non-Renewable:** resources that are limited in abundance due to their non-renewable nature and whose availability may run out in the future are called non-renewable resources. Examples include fossil fuels, minerals, etc.

Importance for Conservation of Natural Resources

- ❖ Maintain ecological balance for supporting life.
- ❖ Preserve different kinds of species (biodiversity).



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- ❖ Make the resources available for present and future generations.

- ❖ Ensure survival of human race.

Soil is a very important natural resource and an abiotic component of the environment. Soil is the uppermost layer of earth's crust, which supports growth of plants.

Water is essential for survival of all living organisms. It is the most important component of all life forms and necessary for sustaining life. Water also regulates climate, generates electricity and is also useful in agriculture and industries

Biodiversity is essential for maintenance of ecosystem. It maintains gaseous composition of atmosphere, controls climate, helps in natural pest control, pollination of plants by insects and birds, soil formation and conservation, water purification and Health

Alternative energy

It refers to energy sources other than fossil fuels (such as coal, petroleum, and diesel) and includes all renewable and nuclear energy sources.

Bioenergy

- ❖ It is one of many diverse resources available to help meet our demand for energy.

- ❖ It is a form of renewable energy that is derived from plant- and algae-based materials known as biomass, which can be used to produce transportation fuels.

- ❖ Fuel developed from natural and organic materials or wastes, which are a renewable and sustainable source of energy is known as Biomass.

Few types of fuels used to generate biomass are

- Scrap Wood
- Forest debris (Wood waste, sawmill waste, green waste from landfills and other vegetative)
- Certain agricultural crops and wastes
- Manure
- Animal waste
- Ethanol waste
- Municipal Solid Waste (sewage sludge or other landfill organics)
- Landfill gas
- Other industrial waste (i.e. paper sludge from paper recycling processes)



Characteristics of Biomass Energy:

- a. Biomass fuels consists of three main parts i.e., wood, waste and alcohol fuels.
- b. Wood is the common method of biomass. Earlier, wood is burned because of cooking. Generally wood is used to generate electricity.
- c. Trash which comes from plants turns waste into a source of energy. Waste energy comes from garbage which is used to produce electricity and also from collection of methane gas from landfills
- d. Alcohol fuels refer to ethanol which is used in transportation sector.

Some of the advantages of biomass energy are:

- a. Biomass is always and widely available as a renewable source of energy.
- b. It is carbon neutral.
- c. It reduces the overreliance of fossil fuels.
- d. Is less expensive than fossil fuels.
- e. Biomass production adds a revenue source for manufacturers.
- f. Less garbage in landfills.



Unit IV: Energy and Environment - Basics principles, applications, non-renewable and renewable and renewable energy resources significance of wind, solar, hydal, tidal, waves, ocean thermal energy and geothermal energy.

Energy is defined by physicists as the capacity to do work. Energy is found on our planet in a variety of forms, some of which are immediately useful to do work, while others require a process of transformation. The sun is the primary energy source in our lives. Besides, water, fossil fuels such as coal, petroleum products, water, nuclear power plants are sources of energy.

Principles of Energy

1. Energy is a physical quantity that follows precise natural laws.
2. Physical processes on Earth are the result of energy flow through the Earth system.
3. Biological processes depend on energy flow through the Earth system.
4. Various sources of energy can be used to power human activities, and often this energy must be transferred from source to destination.
5. Energy decisions are influenced by economic, political, environmental, and social factors.
6. The amount of energy used by human society depends on many factors.
7. The quality of life of individuals and societies is affected by energy choices.

Renewable Energy Resources

Renewable energy systems use resources that are constantly replaced and are usually less polluting. E.g., hydropower, solar, wind, tidal and geothermal (energy from the heat inside the earth), burning of biomass.

- i) **Wind Energy:** The moving air or wind has huge amounts of kinetic energy, and it can be transferred into electrical energy using wind turbines.

Significance of wind energy

1. Wind Energy is virtually a limitless natural physical resource
2. Energy is generated without polluting environment.
3. Has potential to generate energy on large scale.
4. Wind Energy can be used directly as mechanical energy.
5. In remote areas, wind turbines can be used as great resource to generate energy.



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6. In combination with Solar Energy they can be used to provide reliable as well as steady supply of electricity.

7. Land around wind turbines can be used for other uses, e.g. Farming.

ii) **Solar Energy:** Solar energy is the light and heat procured from the sun.

Significance of Solar Energy

1. Solar power is pollution free and causes no greenhouse gases
2. Reduced dependence on foreign oil and fossil fuels
3. Renewable clean power that is available every day of the year, even cloudy days produce some power
4. Return on investment unlike paying for utility bills
5. Virtually no maintenance as solar panels last over 30 years
6. Excess power can be sold back to the power company if grid intertied
7. Can be installed virtually anywhere; in a field to on a building
8. Use batteries to store extra power for use at night
9. Solar can be used to heat water, power homes and building, even power cars
10. Safer than traditional electric current

iii) **Biomass Energy:** When a log is burned we are using biomass energy. Agricultural waste, sugarcane wastes, and other farm byproducts are also used to produce energy.

Significance of Biomass energy

1. Biomass is always and widely available as a renewable source of energy.
2. It is carbon neutral.
3. It reduces the overreliance of fossil fuels.
4. Is less expensive than fossil fuels.
5. Biomass production adds a revenue source for manufacturers.
6. Less garbage in landfills.

iv) **Hydropower Energy** produced from water is called hydropower

Significance of Hydropower

1. Hydropower is fueled by water, so it's a clean fuel source.
2. It is pollution free and causes no greenhouse gases



3. The energy generated through hydropower relies on the water cycle
4. Hydropower creates reservoirs that offer a variety of recreational opportunities, notably fishing, swimming, and boating.
5. In addition to a sustainable fuel source, hydropower efforts produce a number of benefits, such as flood control, irrigation, and water supply.

v) **Tidal and Wave Power:** The earth's surface is 70% water. By warming the water, the sun creates ocean currents and the wind that produces waves.

Significance of Tidal energy

1. Tidal power is an environmentally friendly source of energy
2. It does not produce any harmful gas
3. It utilizes a very little space for energy production
4. It is possible to generate electric power at very low speed.

vi) **Ocean Thermal Energy Conversion (OTEC)** is a process that can produce electricity by using the temperature difference between deep cold ocean water and warm tropical surface waters.

Significance of OTEC

1. Power generated from OTEC is pollution free
2. The output generated from OTEC shows very little seasonal or daily variation.
3. Electric power generated can also be used to produce hydrogen.
4. The cold water pumped in the OTEC plant can be used for other things such as air-conditioning and refrigeration.

viii) **Geothermal energy:** It does this using high-temperature (300°F to 700°F) heat – known as geothermal energy – from the Earth, accessed by drilling hot water or dry steam wells in a process similar to drilling for oil.

Significance of Geothermal energy

1. Comparatively ecologically clean.
2. Geothermal power stations have great capacity.
3. Pollution free and cost effective technology
4. Occupies less space and produce less noise.
5. Provides energy security. .



Non-renewable Resources

Those natural resources, on the other hand, that cannot be replaced after their depletion is called non-renewable resources.

- ❖ Fossil fuels include coal, petroleum, natural gas, oil-sand, and oil-shale and natural gas are considered nonrenewable resources.
- ❖ Metals have a wide range of useful physical and chemical properties. They can be used as pure elemental substances, as alloys (mixtures) of various metals, and as compounds that also contain non-metals.

Significance of Nonrenewable resources

1. The main advantages of non-renewable energies is that they are abundant and affordable. For example, oil and diesel are still good choices for powering vehicles.
2. Non-renewable energy is cost effective and easier to product and use.

Disadvantages

1. They can't be replaced or revitalized.
2. Causes damage to the environment. Produce greenhouse gases.



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2.3 Teaching – Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences

Unit V: Waste to wealth - Energy from waste, value added products from waste, fly ash utilization and disposal of garbage, solid waste management in urban and rural areas, Swachh Bharat Abhiyan, recent advances in solid waste management, modern techniques in rain water harvesting and utilization.

Waste is viewed as unwanted or unusable material that has been disposed or discarded after primary use.

Waste Management

1. Generation of less waste, reuse of consumables, recycling of waste and recovery of valuable resources from waste are considered as good practices.
2. Conserve valuable natural resources and energy
3. Lower environmental damage caused by socio-economic development. Thus waste management is strongly linked with the idea of sustainable development.
4. Generate energy in the form of electricity or heat from waste

Benefits of Waste-to-Energy

1. Waste-to-Energy (or energy-from-waste) facilities provide a safe, technologically advanced
2. It reduces greenhouse gases, generates clean energy and recycles metal.
3. It can help mitigate climate change

Utilization of Fly ash

- a. Fly ash, a principal byproduct of coal burning power plants, is an industrial waste.
- b. It contains large amounts of silica, alumina and small amount of unburned carbon, which pollutes environment.
- c. This fly ash has real disposal problems, and should hence be utilized effectively for various purposes.
- d. Both ceramic as well as pozzolanic properties and therefore can be replace of the Portland cement and utilized in a unique way for manufacturing bricks.

Some of the resulting benefits are:

- Higher Ultimate Strength
- Increased Durability,
- Improved Workability



- Reduced Bleeding
- Increased Resistance to Sulfate Attack
- Reduced Shrinkage
- Bricks are smooth and uniform size.

e. Fly ash for Road : Fly ash can be used for construction of road and embankment.

f. Fly ash is also used as a nutrient manure.

With an ever increasing population and rapid pace of urbanization, the country is facing a huge challenge of Municipal Solid waste Management. The volume of waste is projected to rise from the present 62 million tons to about 150 million tons by 2030. This necessitates the importance of scientific solid waste management in today's context.

Disposal of Garbage (Solid Waste)

Garbage is arising from human or animal activities, that is abandoned as unwanted and useless is referred as solid waste.

- ❖ It is generated from industrial, residential and commercial activities in a given area
- ❖ It categorized based on materials such as paper, plastic, glass, metal and organic waste.
- ❖ Solid waste disposal management is usually referred to the process of collecting and treating solid wastes.

Methods of Solid Waste Disposal and Management:

Following methods are generate pollution in air, land and water. So it should be avoided.

- Burning of Solid Waste in Open areas
- Dumping of waste in Ocean
- Disposal by hog feeding (Garbage disposal into sewers including BOD and TSS increases by 20-30 %.)
- Damping on the land



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Ecofriendly disposal Methods

- a) **Solid wastes sanitary landfills:** Solid wastes sanitary landfills process is simple, clean and effective.
- b) **Incineration method:** Incineration method is suitable for combustible refuse. It can be used to reduce the volume of solid wastes for land filling.
- c) **Composting process:** The biodegradable wastes processed by composting, vermicomposting, anaerobic digestion or any other appropriate biological processing for stabilization of wastes. Two methods have been used in this process:
 - a) Open Window Composting
 - b) Mechanical Composting
- d) **Electricity generation:** Utilizing plasma arc gasification process is an option for eco-friendly solid waste management in which large volume reduction of waste up to 95% is possible. This use for generation of electricity.
- e) **Salvaging procedure:** Materials such as metal, paper, glass, rags, certain types of plastic and so on can be salvaged, recycled, and reused.
- f) **Fermentation/biological digestion:** Biodegradable wastes are converted to compost and recycling can be done whenever possible. Hazardous wastes can be disposed using suitable methods.

Rain water harvesting

- ❖ Rain is the first form of water in the hydrological cycle.
- ❖ It is a primary source of water for us.
- ❖ The rainwater collected can be stored for direct use or can be recharged into the groundwater.
- ❖ Collection and efficient storage of rainwater from different basement areas like rooftops of residential buildings, ground surface, rock catchments
- ❖ These methods are mostly used for water conservation.

Swachh Bharat Abhiyan

Swachh Bharat Mission (SBM), Swachh Bharat Abhiyan, or Clean India Mission is a country-wide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management. Swachh Bharat Mission was launched throughout length



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and breadth of the country as a national movement. The campaign aims to achieve the vision of a 'Clean India' by 2nd October 2019, the 150th anniversary of the birth of Mahatma Gandhi.

Objectives Swachh Bharat Mission

- ❖ The first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behavior change regarding sanitation practices, and augmentation of capacity at the local level.
- ❖ The second phase of the mission aims to sustain the open defecation free status and improve the management of solid and liquid waste

Importance of rainwater harvesting

Rainwater is the primary source of new fresh water. Therefore, harvesting rainwater at the point of supply itself has many advantages as below:

1. Harvesting the rainwater are simple, economical and eco-friendly
2. Rainwater is bacteriologically pure, free from organic matter and soft in nature.
3. It help in reducing the flood hazard.
4. It improves the quality of existing ground water through dilution.
5. The recharged aquifer also serves as a distribution system.
6. Rainwater may be harnessed at place of need and may be utilized at time of need.

Methods of rainwater harvesting

There are two basic ways of rainwater harvesting

- a) Surface runoff harvesting: rainwater flowing along the surface is collected in an underground tank.
 - b) Rooftop rainwater harvesting: Rainwater is collected from roof catchment and stored in a tank
- ❖ Rainwater is the purest type of water source. As a result, it can be consumed directly.
 - ❖ If water is collected from a dirty surface, it can be made usable by utilizing a proper filtering system.
 - ❖ Following that, it can be used for drinking, cooking, bathing, laundry, toiletry purposes, watering gardens, composting, birdbaths, recharging ponds and pools, washing vehicles, and fire extinguishing.



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ENVIROMENTAL STUDIES

ENVIROMENTAL ISSUES

NAME : P. TAMIL SELVAN
REG NO : 20UCH078
CLASS : B.Sc CHEMISTRY IIInd YEAR
SECTION : "B"
COLLEGE : JAMAL MOHAMED COLLEGE, TRICHY.



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JAMAL MOHAMED COLLEGE (AUTONOMOUS) THIRUCHIRAPPALLI EVALUATION SHEET

Name of the student : P. TAMIL SELVAN
Register number : 200CH078
Class : B.Sc. chemistry II Section B
Subject name : ENVIRONMENTAL STUDIES
Subject code : 20UCN3AE28

Sl.no	Description	Maximum marks	Marks awarded
1.	COMPONENT 1	50	46
2.	COMPONENT 2	25	23
3.	COMPONENT 3	25	22
		50	
	TOTAL MARKS	100	91

A. S. S. S. S.
Signature of the Examiner with date
28/11/24



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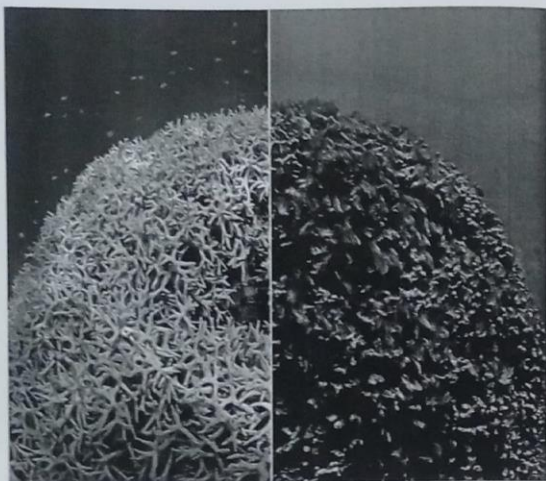
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OCEAN ACIDIFICATION



EFFECT OF SEA ALGAE

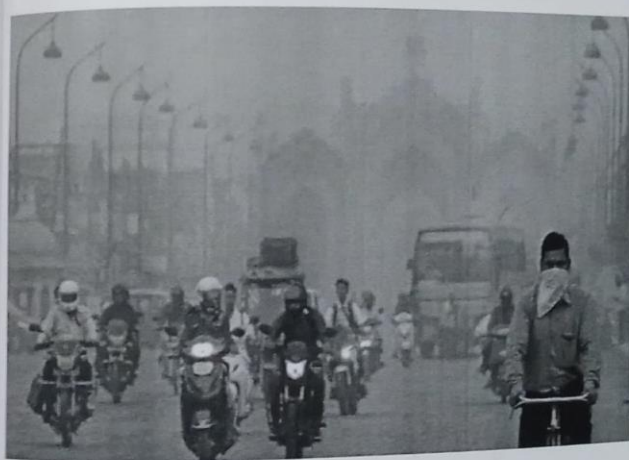


EFFECT OF FISH BY OCEAN ACIDIFICATION

AIR POLLUTION



AIR POLLUTED BY FACTORIES



AIR POLLUTED BY VEHICLES



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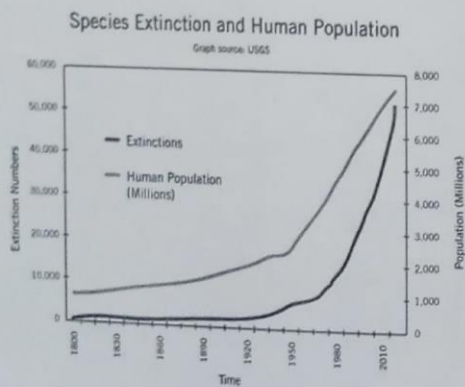
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LOWER BIODIVERSITY

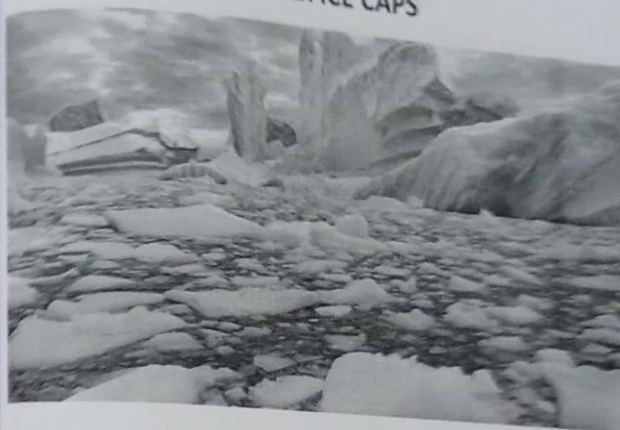


BIO-DIVERSITY ARE DESTROYED BY HUNTERS

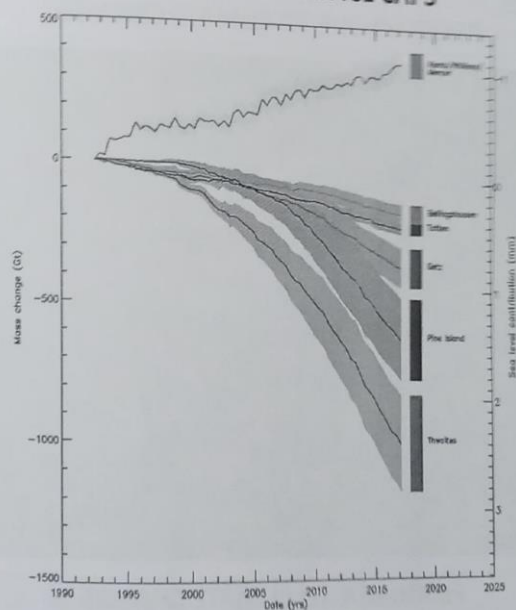


LOSS OF BIO-DIVERSITY

POLAR ICE CAPS



MELTING OF POLAR ICE CAPS



GRAPH OF ANTARCTIC ICE CAPS MELTATION



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- Waste management that leads to generation of substances and products that can be put to primary use is an emerging major sector for employment to meet the livelihood needs of the vast majority of India's rapidly growing population. Given the magnitude of waste generated, innovative waste conversion processes can create micro-entrepreneurship opportunities on a massive scale. In India, the potential of waste to wealth enterprise is very high. Currently not enough has been done. Increasing opportunities for this enterprise can have manifold advantages.
- It can bring back useless, discarded waste products into economic use and lead to
 1. Reduction of pressure induced by waste on the environment;
 2. Creation of opportunities for income and employment generation in a relatively new area thereby enhance economic activity; and
 3. Impact quality of life.





Air Pollution



Traffic Cause for Concern



Air pollution is one of the key current environmental issues. The pollution of air has far reaching implications. It is harmful to both humans and to the environment. Some of the main pollutants are carbon monoxide, nitrogen oxides, sulfur dioxide and lead.

Traffic is a major cause of concern. Throughout the world the numbers of cars are increasing, as are harmful emissions. New generation cars, however, such as hybrid and electric cars are an environmentally friendly option. These cars offer good performance along with limited harmful emissions meaning that they are kind to the environment.



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**ABILITY ENHANCEMENT COURSE - II
ENVIRONMENTAL STUDIES
STUDENT'S WORKBOOK
(UG SECOND YEAR)**



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(AUTONOMOUS)

Tiruchirappalli - 620020

ABILITY ENHANCEMENT COURSE - II

ENVIRONMENTAL STUDIES

STUDENT'S WORKBOOK

DECLARATION

I A. ABINAYA

of II-BSC CHEMISTRY with Register number 21DLH100

declare that the contents of the work submitted for assessment of Environmental studies under Ability Enhancement Course - II during the academic year (2022 - 2023) are my original work.

Date: 7.11.22

A. Abinaya
Signature of the student

A. ABINAYA
Name of the student



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FINAL EVALUATION SHEET

Scheme of Evaluation

Name of the Student: A. ABINAYA
Register number: 2107CH100
Class: II-BSc
Department: CHEMISTRY

S.No	Description	Maximum marks	Marks awarded
1.	Activity - I	Field report - 25	20
2.	Activity - II	Quiz - 25	21
3.	Activity - III	Album Making - 25	24
4.	Activity - IV	Assignment - 25	25
	Total Marks	100	90

G. Hema Sindhuja

Signature of the Evaluator

(Dr. G. HEMA SINDHUJA)



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ENVIRONMENTAL
STUDIES.
FIELD REPORT.

BY:

A. ABINAYA,

II - B-Sc.CHEMISTRY.

TIRUCHI 100.

G.H.S.
17/10/22.



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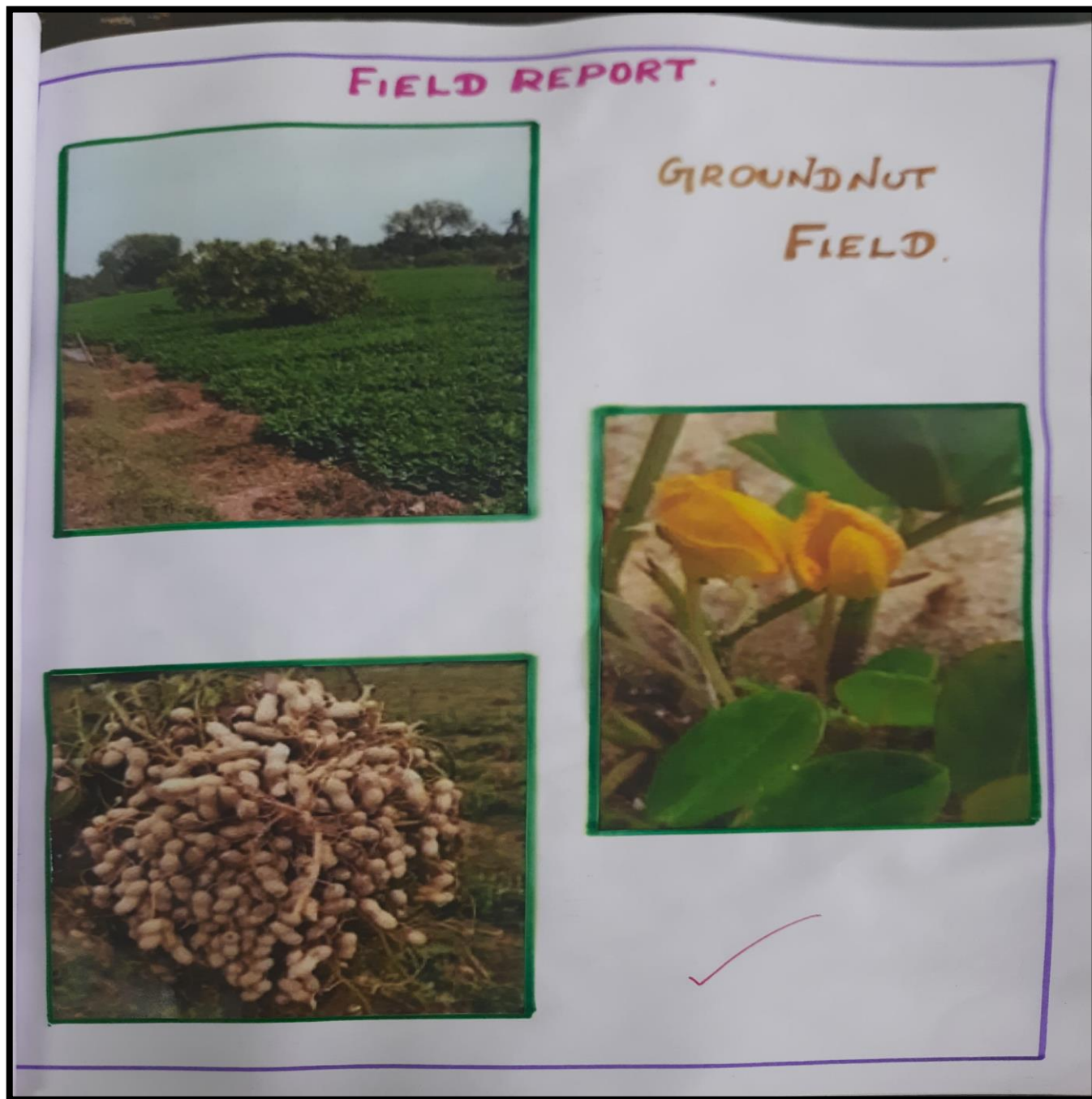
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GROUND NUT:

Scientific classification:

Kingdom : Plantae.

Order : Fabales.

Family : Fabaceae.

Sub family : Faboideae.

Genus : *Anachis*.

Species : *A. hypogaea*.

Binomial name: *Anachis hypogaea*.

The groundnut is also known as peanut. It is a legume crop grown mainly for its edible seeds. It is classified as both a grain legume and due to its high oil content, an oil crop.

This groundnut field pictures are taken from our own field. We take care for this seeds for 3 months after that we take some amount of groundnut for our personal use like oil etc.. and the remaining will be sold to the wholesale market.

The botanist Carl Linnaeus gave peanuts the specific epithet *hypogaea*, which means "under the earth".





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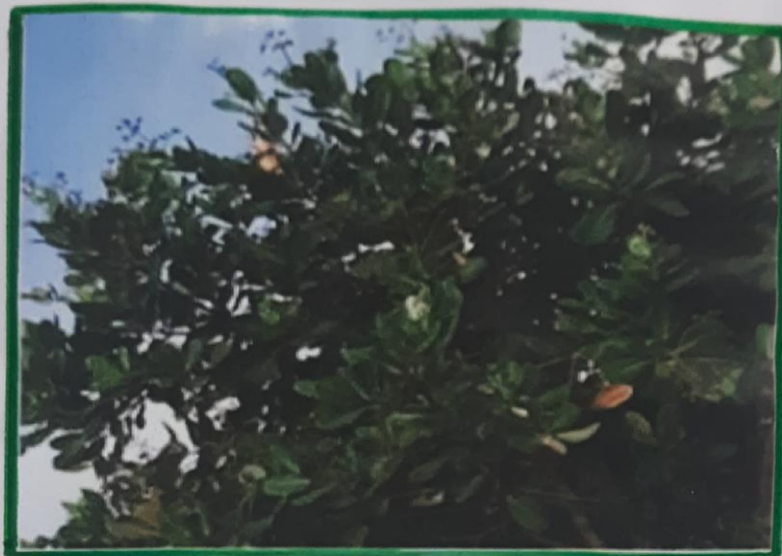
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CASHEW TREE.





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CASHEW TREE :

Scientific classifications:

Kingdom : Plantae.

Order : Sapindales.

Family : Anacardiaceae.

Genus : Anacardium.

Species : A. occidentale.

Binomial name: *Anacardium occidentale* L.

The cashew tree is a tropical evergreen tree that produces the cashew seed and the cashew apple accessory fruit. The tree can grow as tall as 14 metres (46 feet), but the dwarf cultivators, growing up to 6m (20 ft), with earlier maturity and greater yields. The cashew seed is commonly considered a snack nut eaten on its own, used in recipes, or processed into cashew chips or cashew butter. Like the tree, the nut is often simply called a cashew.



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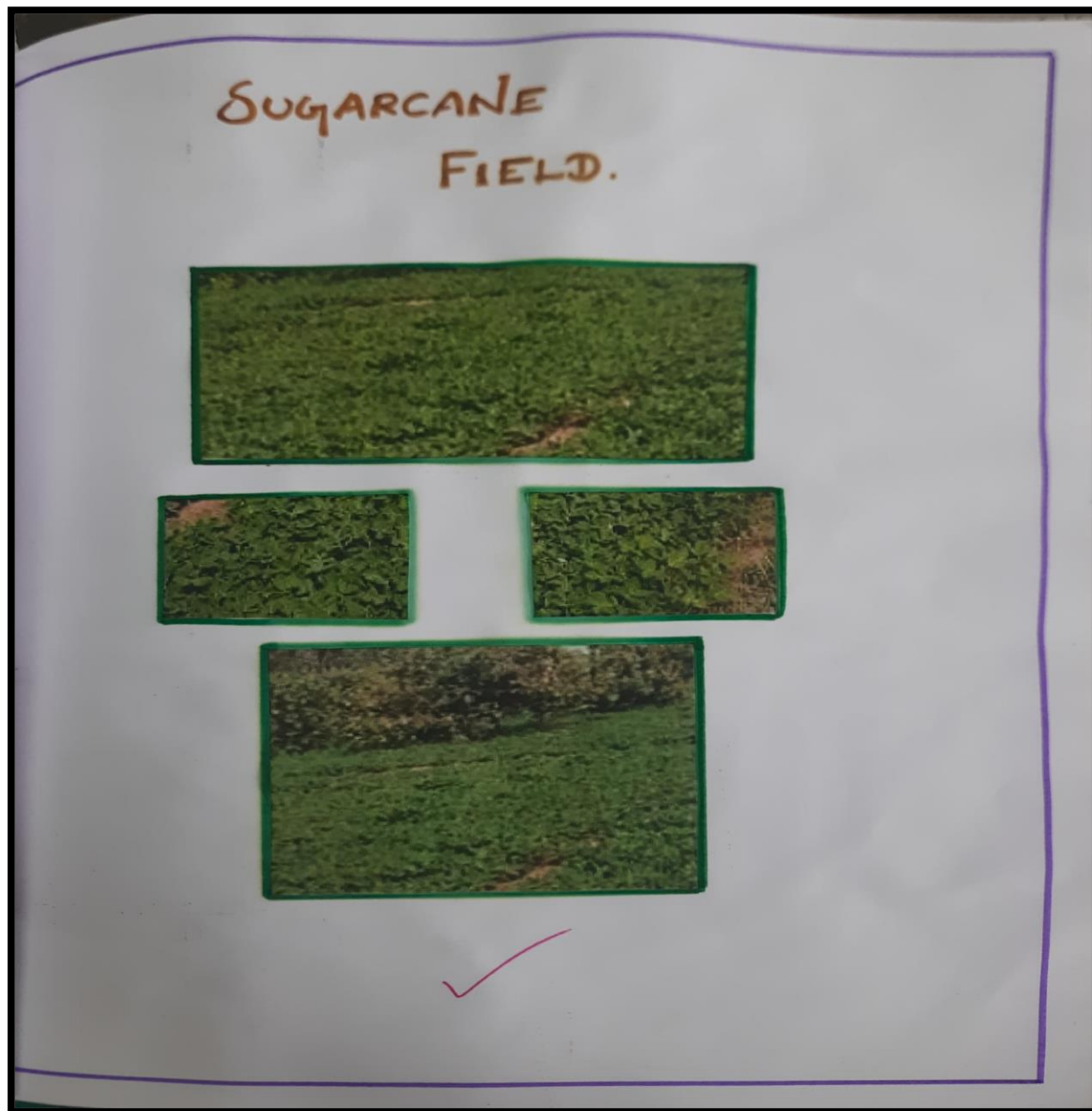
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SUGARCANE.

Scientific classification:

Kingdom : Plantae.

Order : Poales.

Family : Poaceae.

Subfamily : Panicoideae.

Genus : Saccharum.

Species : S. officinarum.

Binomial name: *Saccharum officinarum* L.

Sugarcane is a large, strong-growing species of grass in the genus *Saccharum*. Its stout stalks are rich in sucrose, a simple sugar which accumulates in the stalk internodes. It originated in New Guinea, and is now cultivated in tropical and subtropical countries worldwide for the production of sugar, ethanol and other products.



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PG AND RESEARCH DEPARTMENT OF CHEMISTRY (SF)
JAMAL MOHAMED COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-620 020.

Environmental Studies Quiz

Class: II B.Sc Chemistry

Reg. No 21UCH1100

Score 21/25

- The main reason for blueness of the sky is -
 - ☐ Due to the presence of water vapor
 - ☐ Due to the absorption of blue light due to the air
 - ☒ Due to the scattering of sunlight by air molecules
 - ☐ None of the above
- Which of the following is the cause of Melanoma (skin cancer)?
 - ☐ Acid rain
 - ☐ Allergens
 - ☒ Ozone depletion
 - ☐ None of the above
- The yellowness of the Taj Mahal is an effect of -
 - ☒ Acid rain
 - ☐ Allergens
 - ☐ Ozone depletion
 - ☐ None of the above
- The solar cell converts which energy into electrical energy?
 - ☐ Chemical energy
 - ☒ Solar energy
 - ☐ Magnetic energy
 - ☐ None of the above
- Which of the following is a renewable source of energy?
 - ☐ Coal
 - ☐ Uranium
 - ☒ Wind
 - ☐ None of the above
- Which of the following is said to be a biodegradable waste?
 - ☐ Plastics
 - ☐ Glasses
 - ☒ Eggshell
 - ☐ Polythene
- Which of the following has a maximum speed?
 - ☒ Light
 - ☐ Air
 - ☐ Sound
 - ☐ Water current
- The ozone layer is present in -
 - ☐ Mesosphere
 - ☐ Thermosphere
 - ☒ Stratosphere
 - ☐ None of the above
- Which of the following is the hottest planet of the solar system?
 - ☒ Venus
 - ☐ Mercury
 - ☐ Jupiter
 - ☐ Uranus
- Which of the following gas destroys the chlorophyll present in the plant leaves?
 - ☐ SO₃
 - ☐ H₂S
 - ☒ SO₂
 - ☐ CO₂



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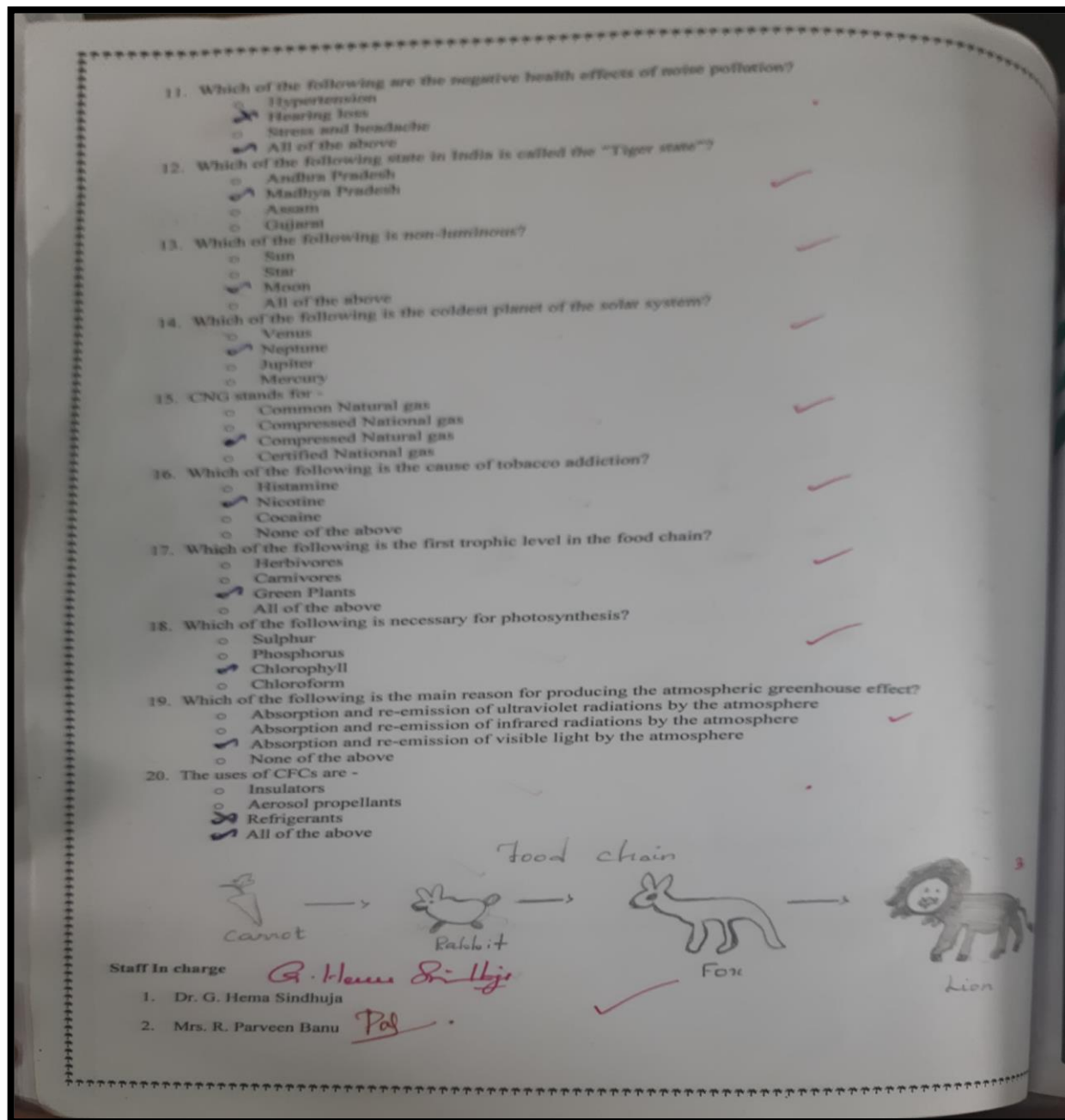
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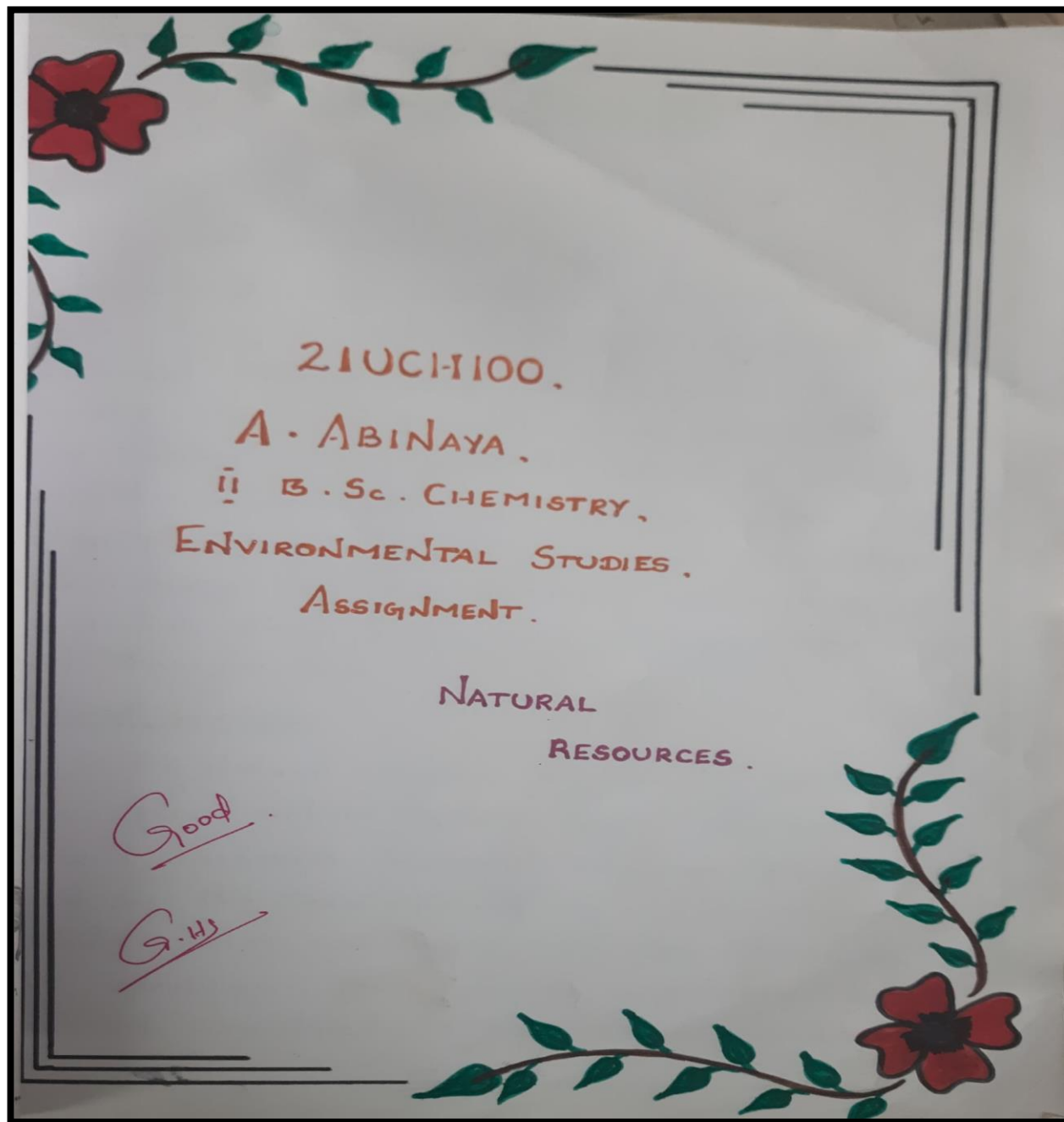
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NATURAL RESOURCES.

Introduction:

Natural resources are the resources that exist without any actions or interventions of human being in nature. This includes all of the valued characteristics like gravitational, magnetic, electrical properties and forces, etc. While talking about earth, it consists of water, sunlight, atmosphere, land including all minerals along with all the vegetation, crops, and animal life that naturally subsists on or within these known and identified substances and characteristics.

Natural resources:

Natural resources are the ones that come from nature. People cannot make natural resources, however, they can collect them. Some of the examples of natural resources include water, coal, wood and iron. Some of the resources, for example, hydroelectric energy are not considered to be natural science but



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since they are made by people.



Classification of natural resources:

Natural resources are mainly classified into 2 different categories:

1. Renewable natural resources
2. Non-renewable natural resources.

Renewable natural resources:

Renewable natural resources are the resources that can be generated again once they are used. Some of the examples of renewable



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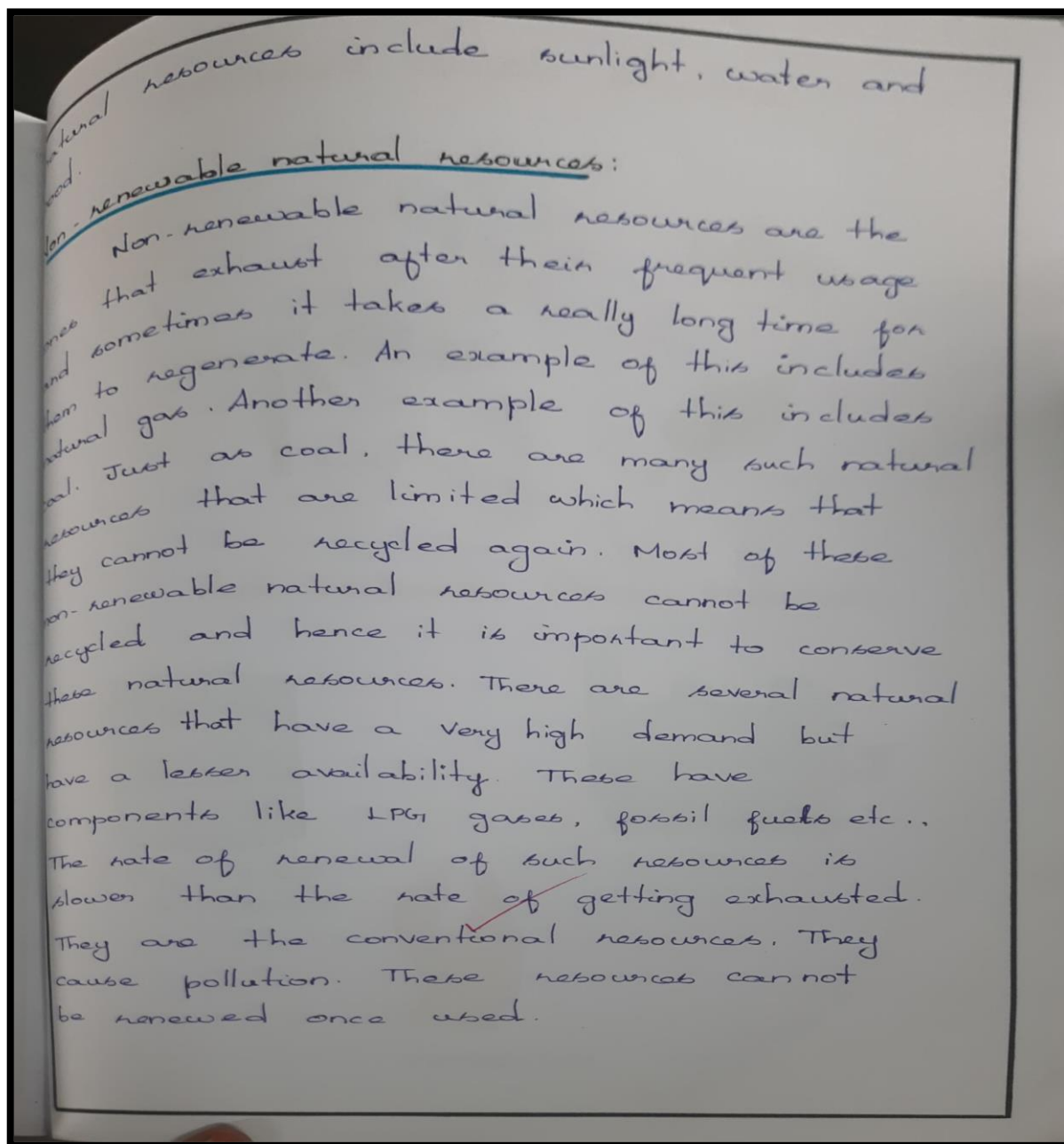
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NAAC - SSR IV CYCLE

Criterion II Teaching-Learning and Evaluation

2.3 Teaching - Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences





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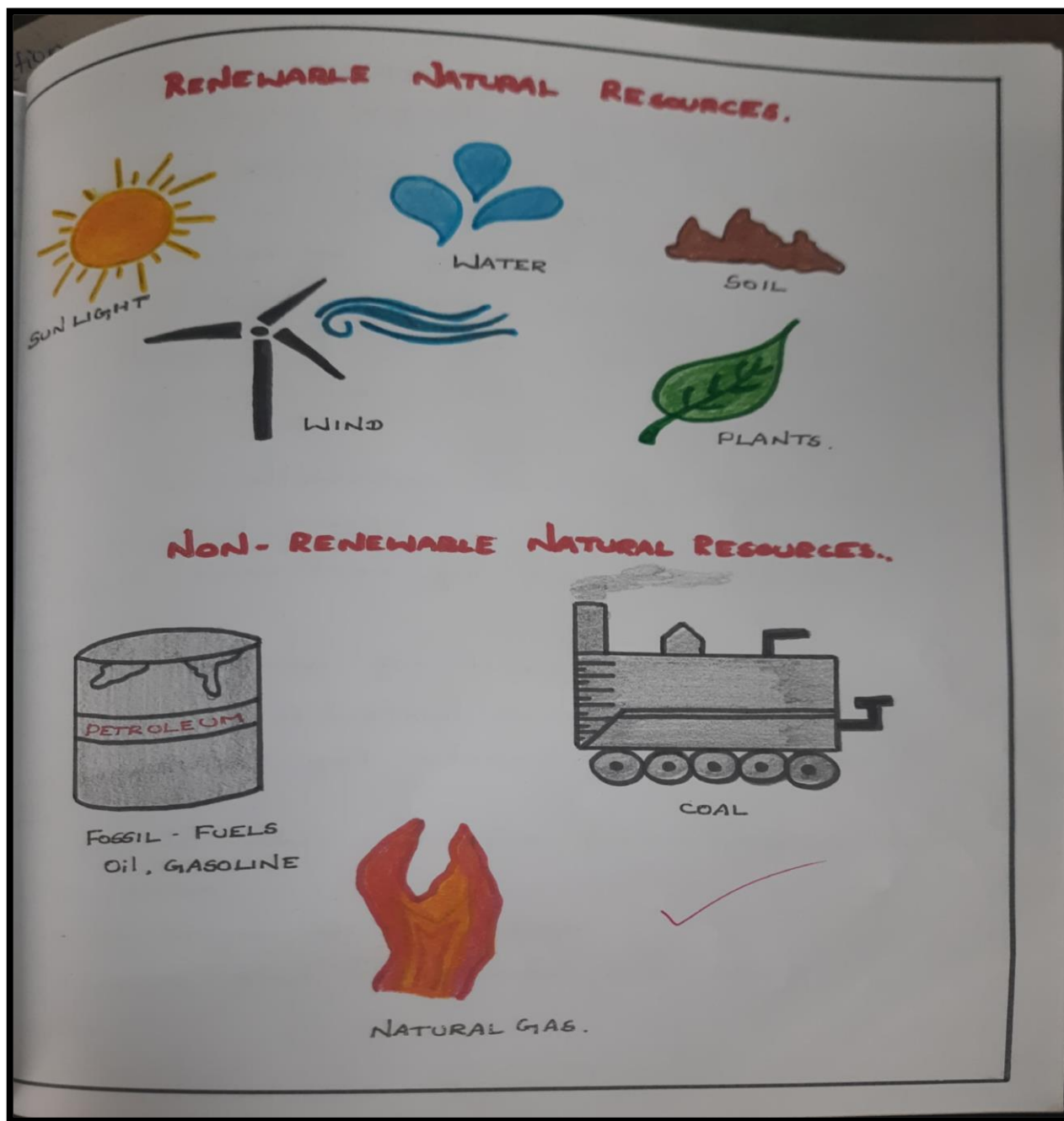
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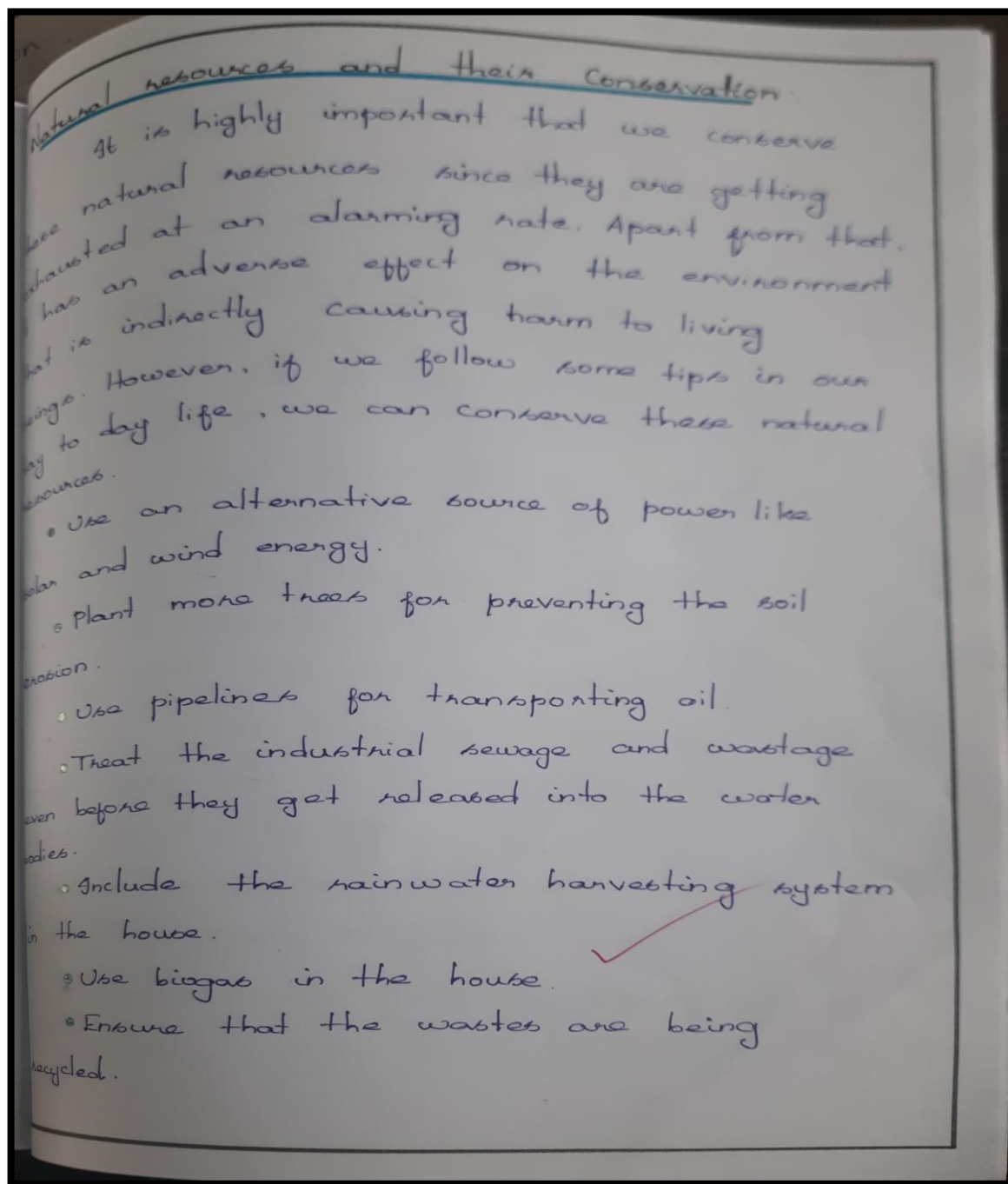
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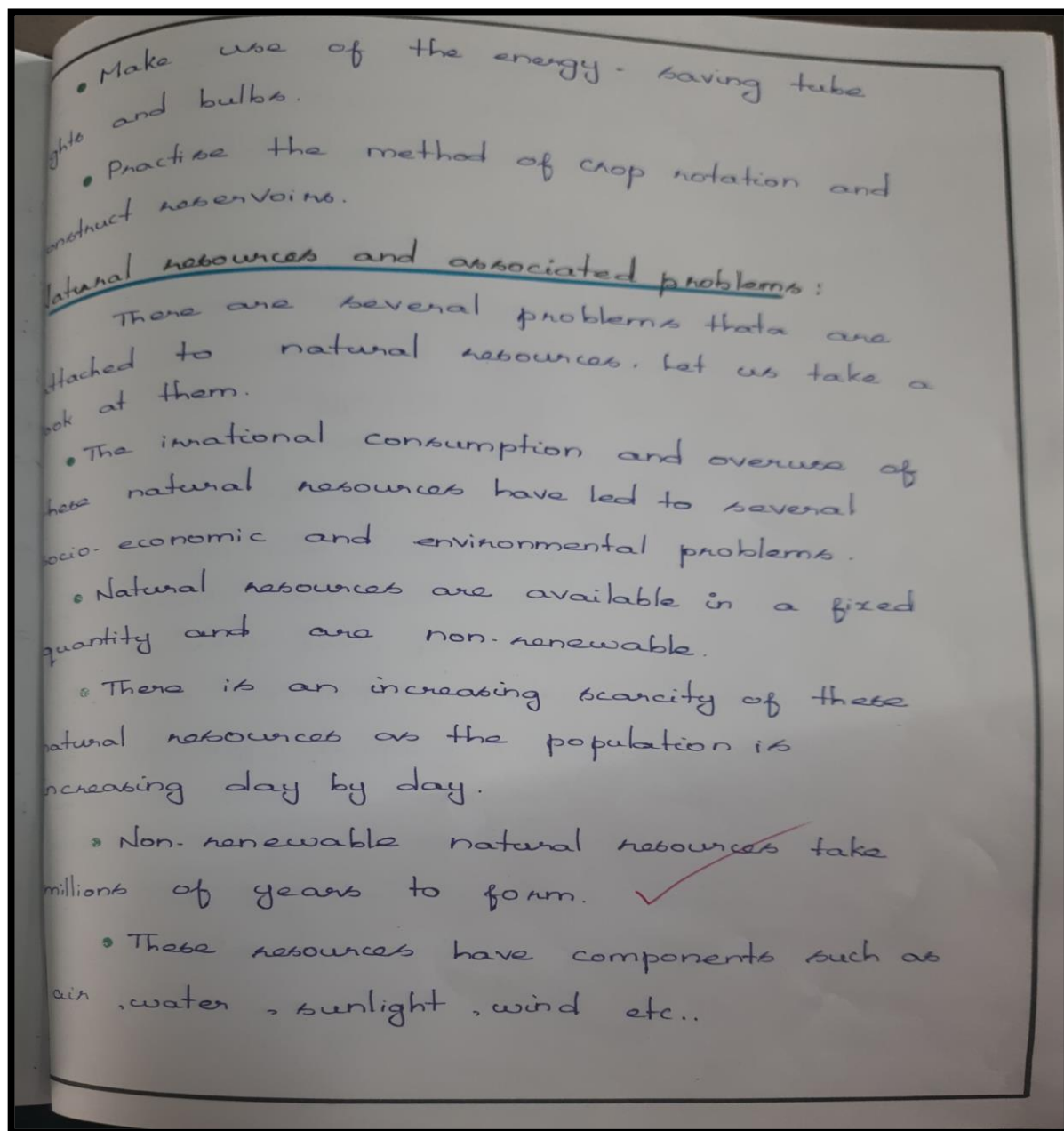
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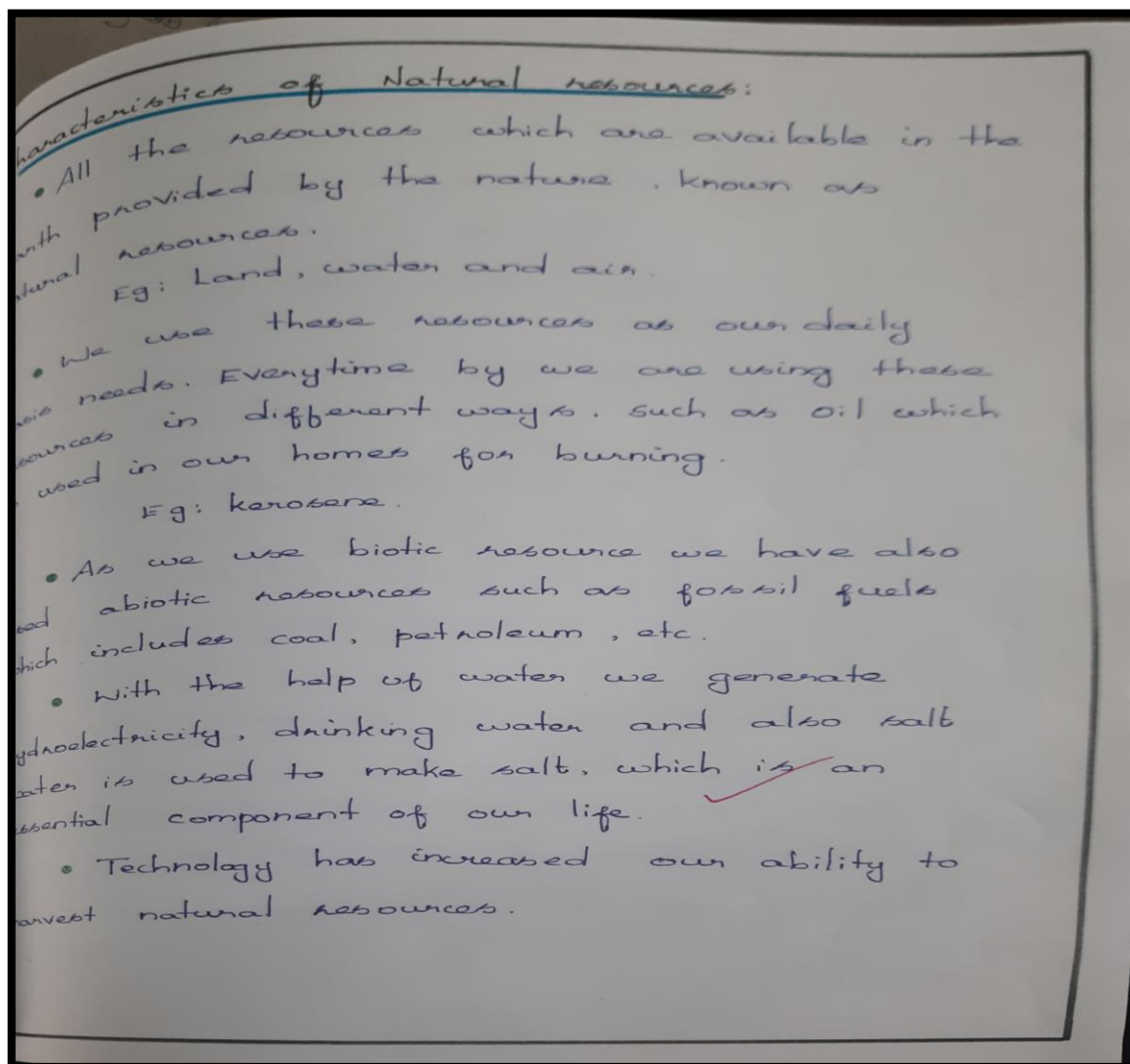
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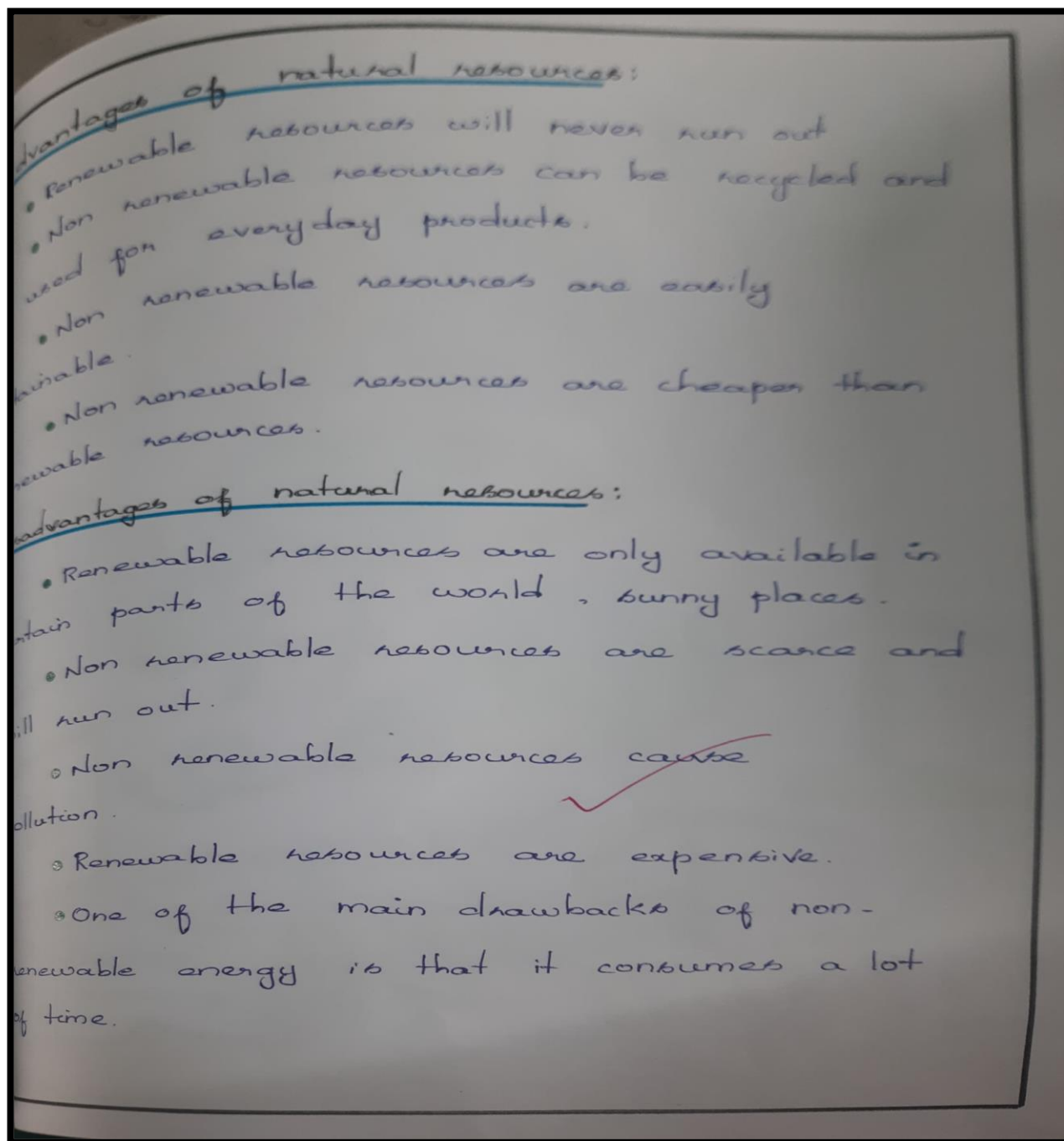
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ABILITY ENHANCEMENT COURSE - II ENVIRONMENTAL STUDIES STUDENT'S WORKBOOK

(UG SECOND YEAR)



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(AUTONOMOUS)
Tiruchirappalli - 620020

ABILITY ENHANCEMENT COURSE - II

ENVIRONMENTAL STUDIES

STUDENT'S WORKBOOK

DECLARATION

I L. KAVIYA
of II - BSC CHEMISTRY with Register number 2112CH105
declare that the contents of the work submitted for assessment of Environmental
studies under Ability Enhancement Course - II during the academic year (2022 - 2023)
are my original work.

Date: 07.11.22

L. Kaviya
Signature of the student

L. KAVIYA
Name of the student



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FINAL EVALUATION SHEET

Scheme of Evaluation

Name of the Student: L. KAVIYA

Register number: 21UCH105

Class: II - BSC

Department: CHEMISTRY

S.No	Description	Maximum marks	Marks awarded
1.	Activity - I	Field report - 25	24
2.	Activity - II	Quiz - 25	20
3.	Activity - III	Album Making - 25	25
4.	Activity - IV	Assignment - 25	23
	Total Marks	100	92

G. Hema Sindhuja

Signature of the Evaluator

(Dr. G. HEMA SINDHUJA)



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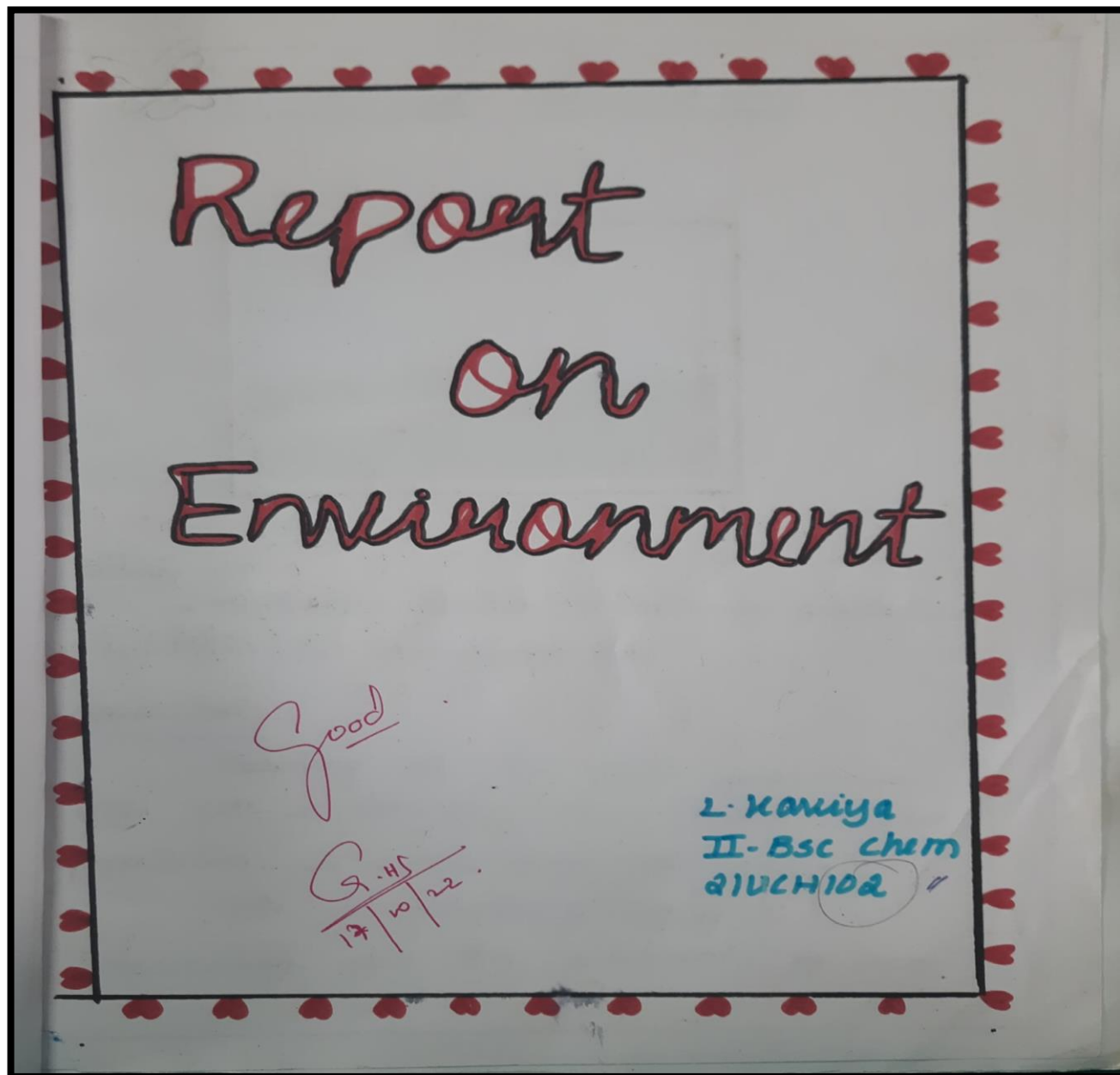
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REPORT ON ENVIRONMENT



Address:

• THONDAIMAN NALLUR, Thondaiman nallur (PO)
Kulaththurai (TK) PUDUICKOTTAI (DT)

Agriculture:

Farming is the most important job for a country like India whose population is more than 130 crore.

It is something that is necessary for the survival of each



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and Every human being

* Agriculture is the most important aspects of everyone's life.

* Agriculture also acts as a source of Raw Material to many Industries like textiles, oil and sugar Mills, Rubber Industries

Agriculture Advantages:

* The advent of New technologies has helped the farmers to increase production by decreasing the cost.

* Biotechnology and tissue culture, with hybridization have provided farmers with many good varieties of crops.

* Apart from high yield hybridization helps the crops to sustain extreme weather conditions



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leading to increased profit
to the farmers.



Environment problems of Agriculture:

- * soil erosion
- * Deforestation
- * Salinization
- * On-site pollution from
Fertilizers and pesticides
- * Degradation of water
aquifers:



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drainage:



problems of drainage:

- * Blockages, slow draining
- * clogged drains
- * Root Intrusions
- * collapsed sections of pipe
- * Broken or displaced joints
- * can be cause of soil

Erosion:



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Tamarind Tree:



Main health benefits of Tamarind:

- * A rich source of antioxidants
- * provides natural antimicrobial benefits.
- * May offer anti-diabetic effects
- * offer liver protective benefits
- * May improve heart health and cholesterol...
- * May have anticancer properties



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PG AND RESEARCH DEPARTMENT OF CHEMISTRY (SF)
JAMAL MOHAMED COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-620 020.

Environmental Studies Quiz

Class: II B.Sc Chemistry

Reg. No 21UCH1105

Score 20
25

- The main reason for blueness of the sky is -
 - ☐ Due to the presence of water vapor
 - ☐ Due to the absorption of blue light due to the air
 - ☒ Due to the scattering of sunlight by air molecules
 - ☐ None of the above
- Which of the following is the cause of Melanoma (skin cancer)?
 - ☐ Acid rain
 - ☐ Allergens
 - ☒ Ozone depletion
 - ☐ None of the above
- The yellowness of the Taj Mahal is an effect of -
 - ☒ Acid rain
 - ☐ Allergens
 - ☐ Ozone depletion
 - ☐ None of the above
- The solar cell converts which energy into electrical energy?
 - ☐ Chemical energy
 - ☒ Solar energy
 - ☐ Magnetic energy
 - ☐ None of the above
- Which of the following is a renewable source of energy?
 - ☐ Coal
 - ☐ Uranium
 - ☒ Wind
 - ☐ None of the above
- Which of the following is said to be a biodegradable waste?
 - ☐ Plastics
 - ☐ Glasses
 - ☒ Eggshell
 - ☐ Polythene
- Which of the following has a maximum speed?
 - ☒ Light
 - ☐ Air
 - ☐ Sound
 - ☐ Water current
- The ozone layer is present in -
 - ☐ Mesosphere
 - ☐ Thermosphere
 - ☒ Stratosphere
 - ☐ None of the above
- Which of the following is the hottest planet of the solar system?
 - ☒ Venus
 - ☐ Mercury
 - ☐ Jupiter
 - ☐ Uranus
- Which of the following gas destroys the chlorophyll present in the plant leaves?
 - ☐ SO₃
 - ☐ H₂S
 - ☒ SO₂
 - ☐ CO₂



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11. Which of the following are the negative health effects of noise pollution?

- ☐ Hypertension
- ☐ Hearing loss
- ☐ Stress and headache
- ☒ All of the above

12. Which of the following state in India is called the "Tiger state"?

- ☐ Andhra Pradesh
- ☒ Madhya Pradesh
- ☐ Assam
- ☐ Gujarat

13. Which of the following is non-luminous?

- ☐ Sun
- ☐ Star
- ☒ Moon
- ☐ All of the above

14. Which of the following is the coldest planet of the solar system?

- ☐ Venus
- ☒ Neptune
- ☐ Jupiter
- ☐ Mercury

15. CNG stands for -

- ☐ Common Natural gas
- ☐ Compressed National gas
- ☒ Compressed Natural gas
- ☐ Certified National gas

16. Which of the following is the cause of tobacco addiction?

- ☐ Histamine
- ☒ Nicotine
- ☐ Cocaine
- ☐ None of the above

17. Which of the following is the first trophic level in the food chain?

- ☐ Herbivores
- ☐ Carnivores
- ☒ Green Plants
- ☐ All of the above

18. Which of the following is necessary for photosynthesis?

- ☐ Sulphur
- ☐ Phosphorus
- ☒ Chlorophyll
- ☐ Chloroform

19. Which of the following is the main reason for producing the atmospheric greenhouse effect?

- ☐ Absorption and re-emission of ultraviolet radiations by the atmosphere
- ☐ Absorption and re-emission of infrared radiations by the atmosphere
- ☒ Absorption and re-emission of visible light by the atmosphere
- ☐ None of the above

20. The uses of CFCs are -

- ☐ Insulators
- ☐ Aerosol propellants
- ☐ Refrigerants
- ☒ All of the above

Food chain :

Grass → Cockroach → Rabbit → Snake → Eagle

Staff In charge *G. Hema Sindhuja*

1. Dr. G. Hema Sindhuja

2. Mrs. R. Parveen Banu *Par*



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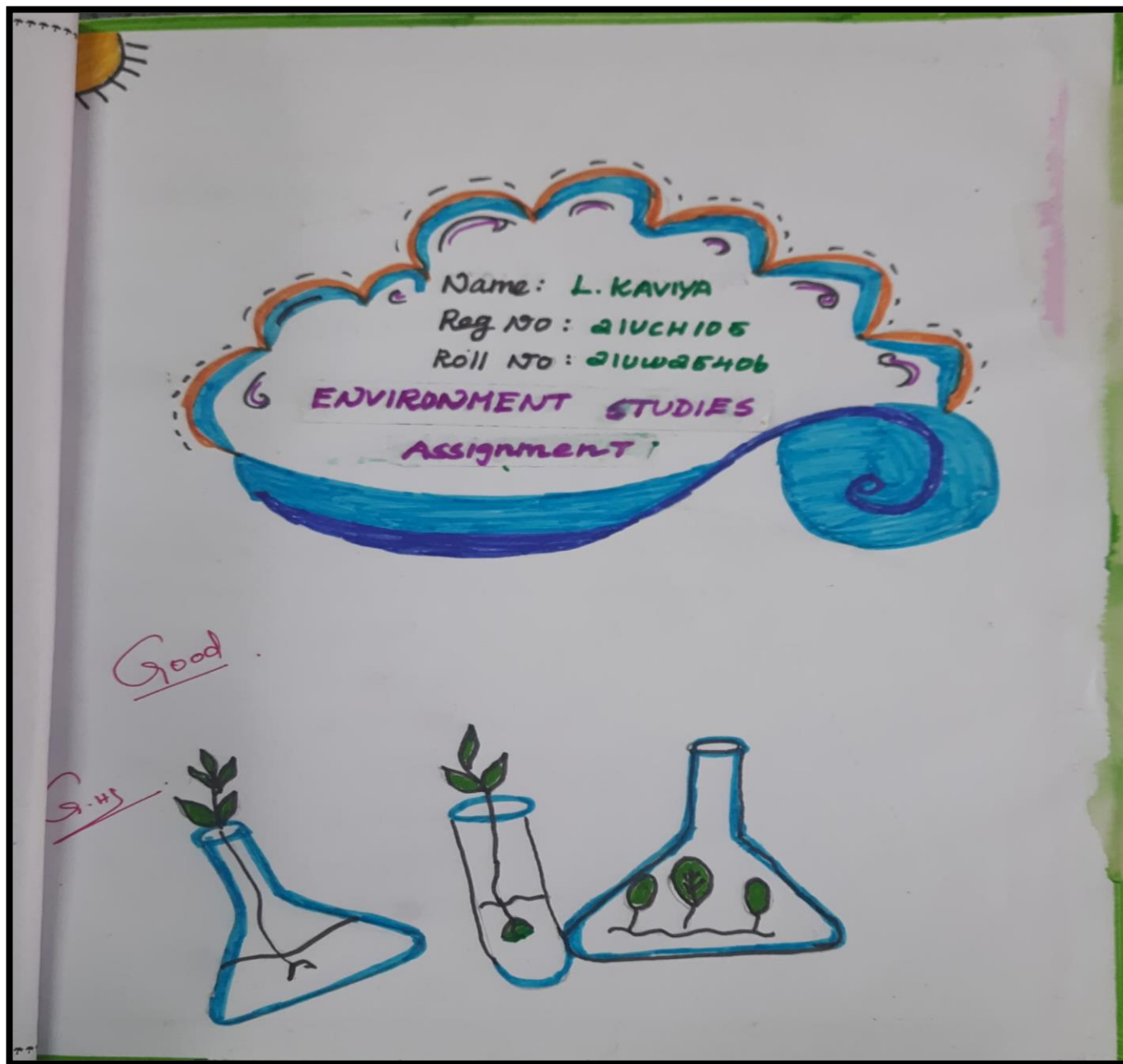
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Meaning in Natural Resource:

* Noun. a naturally occurring source of wealth, as land or water.

* Natural Resources The natural wealth of a country. consisting of land, force, mineral deposits, water extra ...

7 type of Natural Resources:

Natural Resources include

- * oil
- * coal
- * Natural
- * gas
- * metals
- * stone
- * sand



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A natural resource is what people can use which comes from the natural Environment.

Examples:

Natural Resources are air, water, wood, oil, wind energy, Natural gas, iron and coal.

Types of Natural Resources:

Sun



Forest



Rock



Minerals



Water



Air





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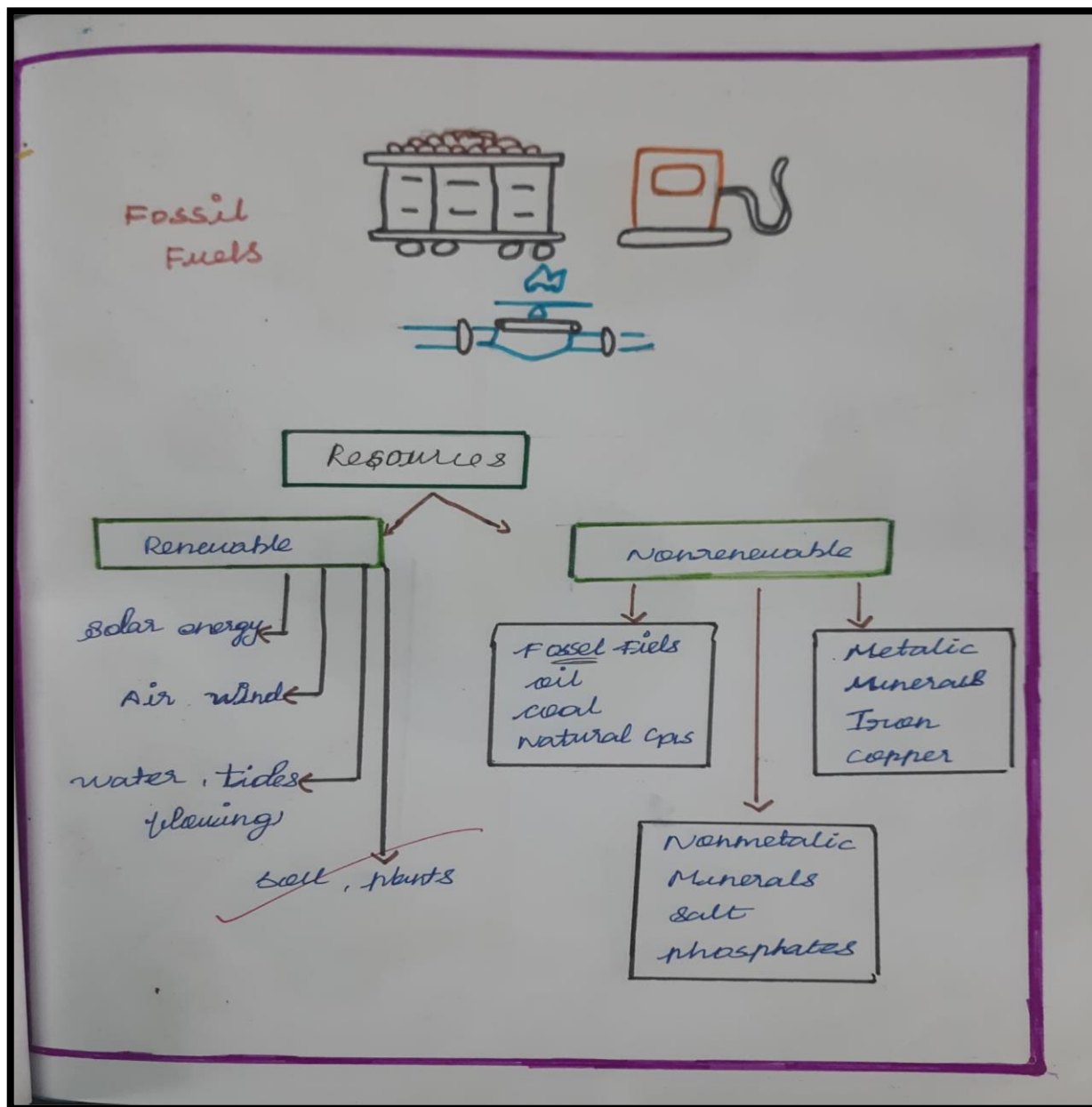
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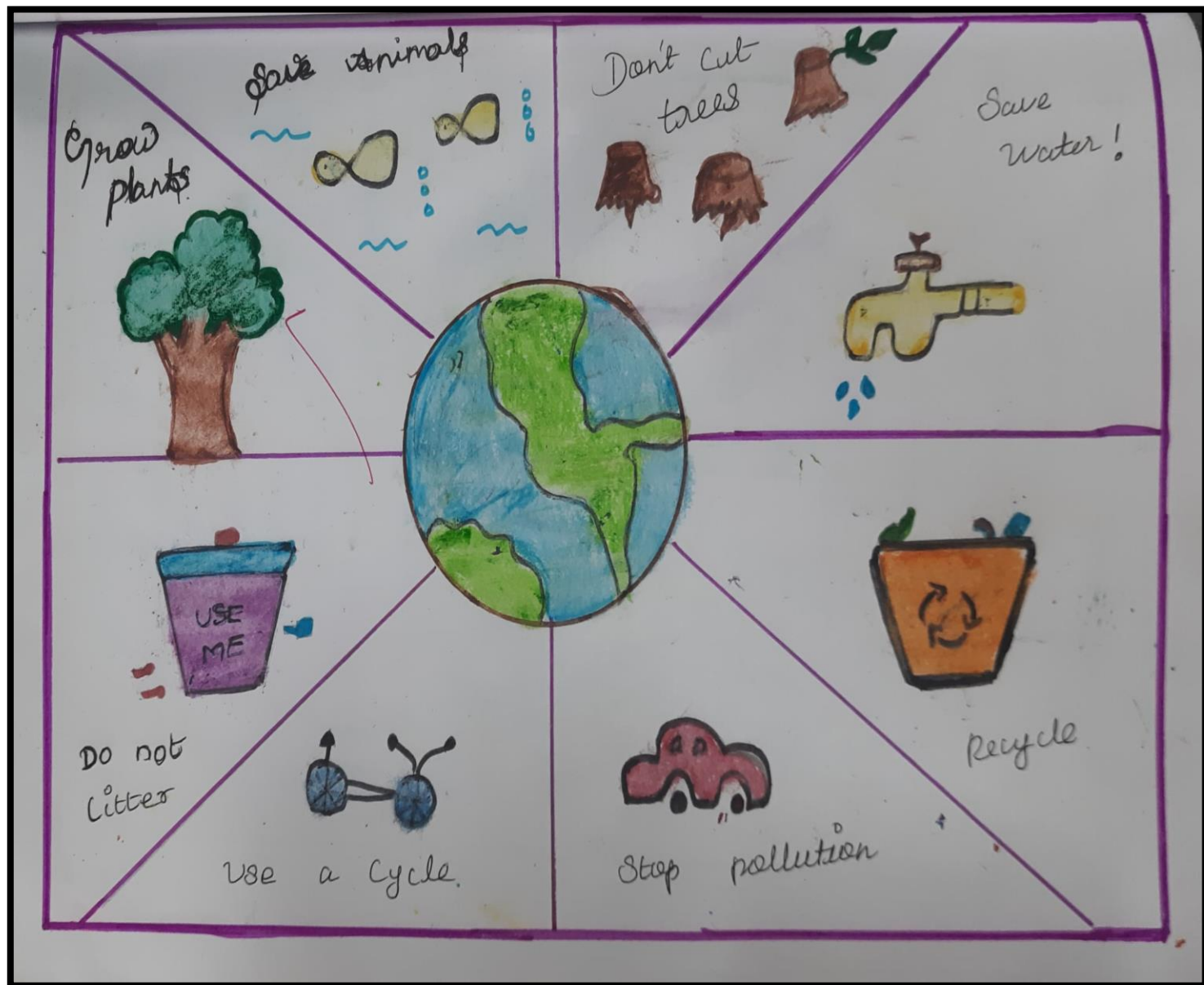
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Renewable and Non-Renewable Differences

Renewable	Non-renewable
These Resource are renewed or replenished by Nature in a short span of time.	these resources may not be replenished by nature or take very long geological time to be formed again
Often these are available continuously like, solar energy water	these resources are exhausted after use Ex-fossils.
Renewable resources can be divided into continuous or flow.	Non-renewable resources can be recycle or non-recycle.



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Save Environment
Save life!!



Better Environment
Better Tomorrow!!





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Recycling plastic

Feels fantastic

Save the Environment

Better Tomorrow



Don't waste Electricity

you will regret it

Time for Nature



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(UG SECOND YEAR)



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Tiruchirappalli - 620020

ABILITY ENHANCEMENT COURSE - II
ENVIRONMENTAL STUDIES
STUDENT'S WORKBOOK

DECLARATION

I M. HUSSAIN BEE
of II BSC CHEMISTRY with Register number 210CH104
declare that the contents of the work submitted for assessment of Environmental
studies under Ability Enhancement Course - II during the academic year (2022 - 2023)
are my original work.

Date: 07.11.22

M. Hussain Bee

Signature of the student

M. HUSSAIN BEE

Name of the student



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FINAL EVALUATION SHEET

Scheme of Evaluation

Name of the Student: M- HUSSAIN BEE

Register number: 21UCH104

Class : 11 BSC

Department : CHEMISTRY

S.No	Description	Maximum marks	Marks awarded
1.	Activity - I	Field report - 25	21
2.	Activity - II	Quiz - 25	20
3.	Activity - III	Album Making - 25	25
4.	Activity - IV	Assignment - 25	22
	Total Marks	100	88

G. Hema Sindhuja

Signature of the Evaluator

(Dr. G. HEMA SINDHUJA)



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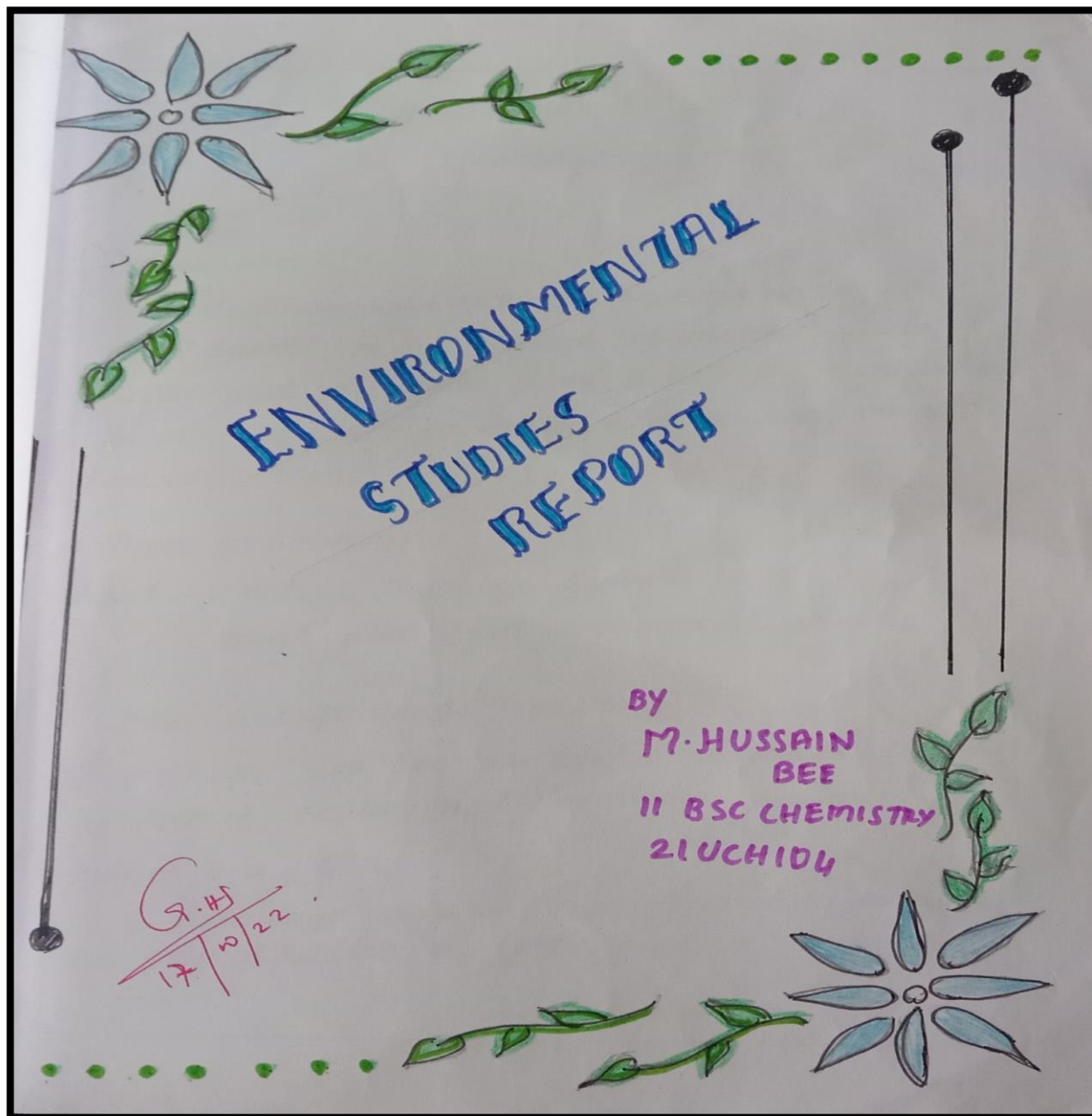
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UNDER GROUND

DRAINAGE SYSTEM

Introduction

* Underground drainage systems have pipes buried in the ground to transport waste water and rainwater from buildings to municipal sewers or septic tanks or underground rainwater harvesting tanks

TABLE OF CONTENTS

- * What is drainage systems?
- * closed and open drainage system

What are Drainage Systems

* There are two uses for a drainage system as part of existing and developing urban systems or cities

* Drainage systems are in place to remove the excess of water in development



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IMAGE OF PREPARING
UNDERGROUND DRAINAGE SYSTEM



Which area = ?



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closed and open drainage systems

- * There are both closed and open drains in area

- * closed drain forms a complex network underground

- * The primary sewage from individual areas is collected and transported to main network, which finally goes to a treatment plant.

- * open drain is mostly used to collect waste water that is not sewage

- * The use of open drains to dispose of sanitary waste is extremely unhygienic and unsafe.

- * The use of open drains to a certain degree can be acceptable. However, any place with collection of water breeds various disease carrying pathogens.



ADVANTAGE OF UNDER GROUND DRAINAGE SYSTEM

* PREVENTS WATER ACCUMULATION

Drainage systems can prevent water accumulation that can lead to flooding by directing the water away from ^{my} the home.

* Water that over-accumulates in your yard may kill plants.

* Drainage system also prevent the accumulation of stagnant water, which can encourage mosquitoes to breed.

* REDUCE SOIL EROSION

* Over time, stagnant water accumulated can make soil muddy, which in turn can cause soil to erode.

Drainage systems maintain balanced moisture in your garden to reduce soil erosion.



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* REMOVE TOXIC MATERIALS AND DISEASE ORGANISMS

* Continuous, heavy rains may cause the water to rise, which can lead to flash floods, especially when you live near a big body of water.

* Often these flash floods bring contaminated water into your soil.

* Drainage systems can remove these toxic materials by draining them away from your yard.

DISADVANTAGE OF UNDER GROUND DRAINAGE SYSTEM

* MAINTENANCE

Regular maintenance of your drainage system will ensure that it functions properly at all times.



* CAN CONTAMINATE BODIES OF WATER

A research conducted by the university of Illinois has shown drainage systems can also contribute to contamination problems, especially when not properly maintained

IMPORTANCE OF UNDERGROUND DRAINAGE SYSTEM

* underground drainage system offers a two-fold advantage to the house holder

* It eliminates the water accumulated in the roof and passes it into the local drainage ditches

* The second benefit offers a more organized and finished look to the residence. The advanced ABS fittings largely help in building a proper sub surface drainage network

CONCLUSION:

Drainage guarantees that the soil is appropriately aerated.

if you have excess or standing water it can obstruct our crops

so if we want to concentrate our drainage system for safe environment. it is our fundamental duties.



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PG AND RESEARCH DEPARTMENT OF CHEMISTRY (SF)
JAMAL MOHAMED COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-620 020.

Environmental Studies Quiz

Class: II B.Sc Chemistry

Reg. No 21UCH104

Score 20/25

- The main reason for blueness of the sky is -
 - ☐ Due to the presence of water vapor
 - ☐ Due to the absorption of blue light due to the air
 - ☒ Due to the scattering of sunlight by air molecules
 - ☐ None of the above
- Which of the following is the cause of Melanoma (skin cancer)?
 - ☐ Acid rain
 - ☐ Allergens
 - ☒ Ozone depletion
 - ☐ None of the above
- The yellowness of the Taj Mahal is an effect of -
 - ☒ Acid rain
 - ☐ Allergens
 - ☐ Ozone depletion
 - ☐ None of the above
- The solar cell converts which energy into electrical energy?
 - ☐ Chemical energy
 - ☒ Solar energy
 - ☐ Magnetic energy
 - ☐ None of the above
- Which of the following is a renewable source of energy?
 - ☐ Coal
 - ☐ Uranium
 - ☒ Wind
 - ☐ None of the above
- Which of the following is said to be a biodegradable waste?
 - ☐ Plastics
 - ☐ Glasses
 - ☒ Eggshell
 - ☐ Polythene
- Which of the following has a maximum speed?
 - ☒ Light
 - ☐ Air
 - ☐ Sound
 - ☐ Water current
- The ozone layer is present in -
 - ☐ Mesosphere
 - ☐ Thermosphere
 - ☒ Stratosphere
 - ☐ None of the above
- Which of the following is the hottest planet of the solar system?
 - ☒ Venus
 - ☐ Mercury
 - ☐ Jupiter
 - ☐ Uranus
- Which of the following gas destroys the chlorophyll present in the plant leaves?
 - ☐ SO₃
 - ☐ H₂S
 - ☒ SO₂
 - ☐ CO₂



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2.3 Teaching - Learning Process

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11. Which of the following are the negative health effects of noise pollution?

- ☐ Hypertension
- ☒ Hearing loss
- ☐ Stress and headache
- ☒ All of the above

12. Which of the following state in India is called the "Tiger state"?

- ☐ Andhra Pradesh
- ☒ Madhya Pradesh
- ☐ Assam
- ☐ Gujarat

13. Which of the following is non-luminous?

- ☐ Sun
- ☐ Star
- ☒ Moon
- ☐ All of the above

14. Which of the following is the coldest planet of the solar system?

- ☐ Venus
- ☒ Neptune
- ☐ Jupiter
- ☐ Mercury

15. CNG stands for -

- ☐ Common Natural gas
- ☐ Compressed National gas
- ☒ Compressed Natural gas
- ☐ Certified National gas

16. Which of the following is the cause of tobacco addiction?

- ☐ Histamine
- ☒ Nicotine
- ☐ Cocaine
- ☐ None of the above

17. Which of the following is the first trophic level in the food chain?

- ☐ Herbivores
- ☐ Carnivores
- ☒ Green Plants
- ☐ All of the above

18. Which of the following is necessary for photosynthesis?

- ☐ Sulphur
- ☐ Phosphorus
- ☒ Chlorophyll
- ☐ Chloroform

19. Which of the following is the main reason for producing the atmospheric greenhouse effect?

- ☐ Absorption and re-emission of ultraviolet radiations by the atmosphere
- ☐ Absorption and re-emission of infrared radiations by the atmosphere
- ☒ Absorption and re-emission of visible light by the atmosphere
- ☐ None of the above

20. The uses of CFCs are -

- ☐ Insulators
- ☐ Aerosol propellants
- ☐ Refrigerants
- ☒ All of the above

Food chain

Staff In charge *G. Hema Sindhuja*

1. Dr. G. Hema Sindhuja
2. Mrs. R. Parveen Banu *Pal*



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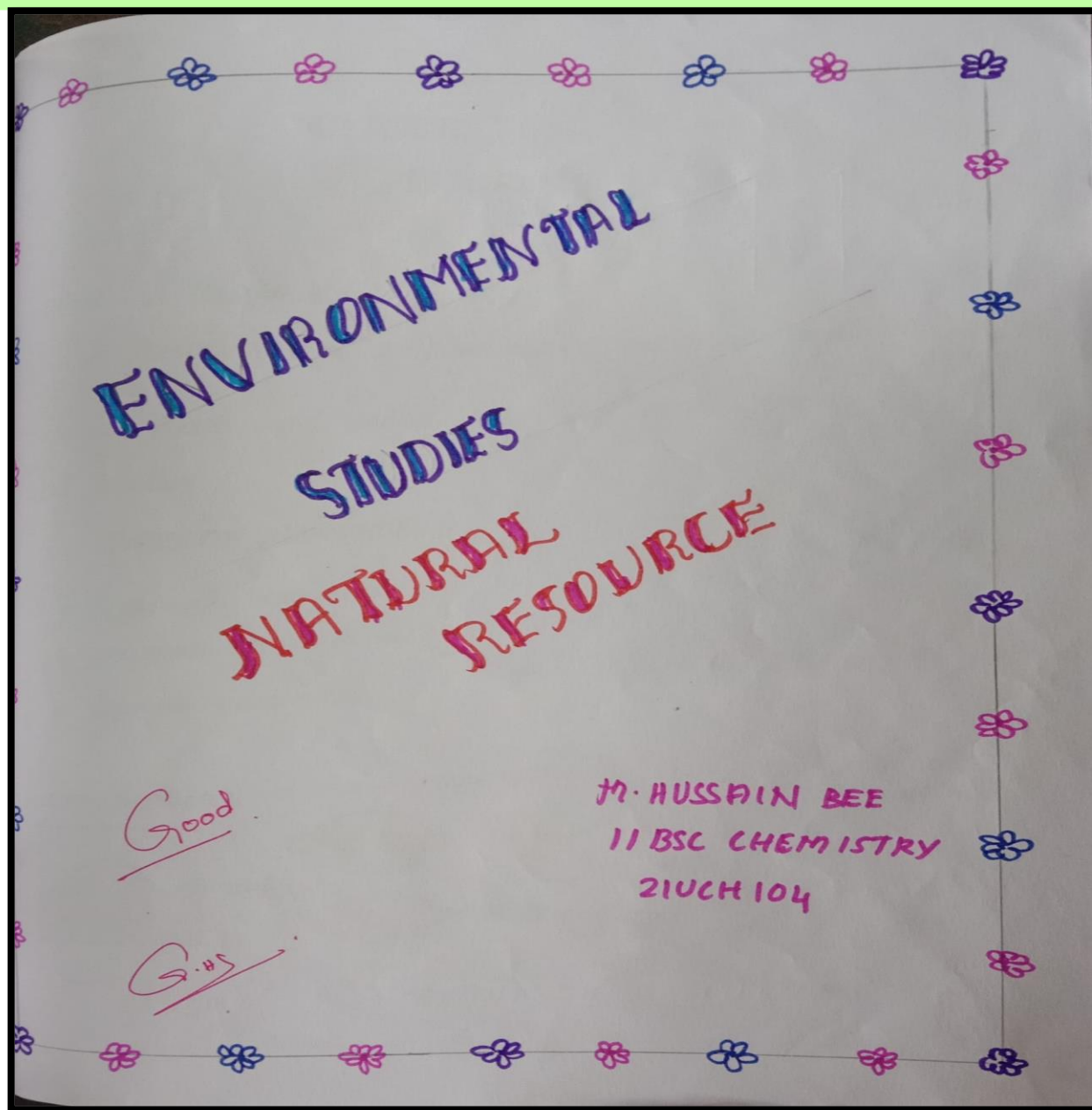
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NATURAL RESOURCES

What is Resources ?

A Resource is a physical material that humans need and value such as land, air and water

TYPES OF RESOURCES

- * Natural Resources
- * Human made Resources
- * Human Resource

NATURAL RESOURCE



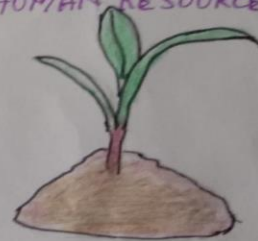
SAND

HUMAN MADE RESOURCES



POTTERY

HUMAN RESOURCE



PLANT



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NATURAL RESOURCES

- * A Naturally occurring source of wealth as land or water
- * Natural resources, the Natural wealth of country, consisting of land, forests, mineral deposits water, etc

5 TYPES OF NATURAL RESOURCES

- * Oil
- * Coal
- * Natural gas
- * Metals
- * sand



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NATURAL RESOURCES IMPORTANT

- * Natural resources are central to human well being
- * We cannot live without the clean air we breathe
- * The plants we eat or the water we drink
- * We need natural resources to put roofs over our heads and heat our homes
- * We need them to survive and to thrive
- * Copper and oil take much longer to form and are considered non renewable



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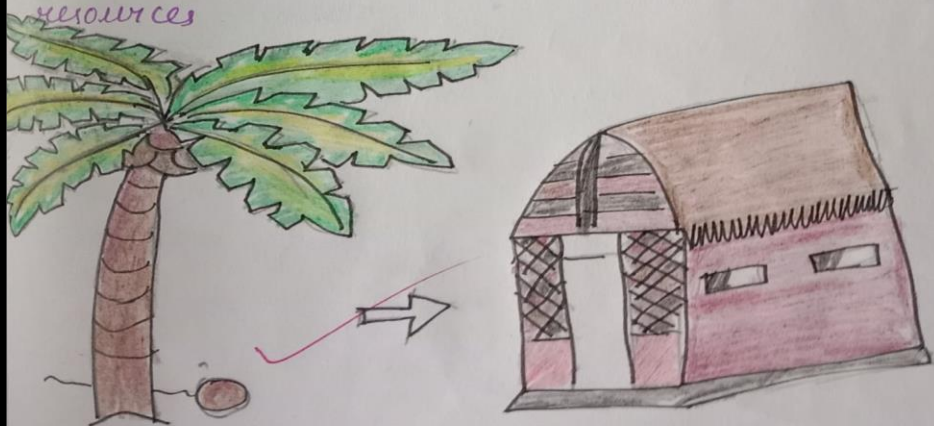
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NATURAL RESOURCES FORMED CONSERVED

Natural conservation is the practice of caring for these resource so all living things can benefit from them now and in the future. All the things we need to survive, such as food, water, air and shelter come from natural resources. Some of these resources, like small plants can be replaced quickly after they are used. Others like large tree take a long time to replace. These are renewable resources.





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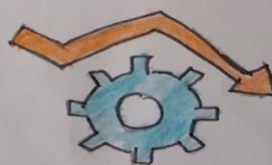
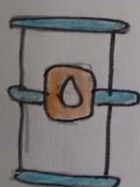
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PROBLEMS OF NATURAL RESOURCES

Natural Resources are not limited, and the following consequences can arise from the careless and excessive consumption of these resources :-

- * Deforestation
- * Desertification
- * Extinction of species
- * Forced migration
- * Soil Erosion
- * Oil depletion
- * Ozone depletion
- * Greenhouse gas increase



OIL DEPLETION



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SOFT SKILL-DEVELOPMENT

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
II	20UCN2SE 1	Ability Enhancement Course-I	Soft Skills Develop- ment	2	2	100	100	-

Course Outcomes:

At the end of the course, the learners will be able to

1. Develop positive psychological and physical outlook
2. Recognize opportunities and overcome threats
3. Optimize their life skills experience and create a personal growth plan.
4. Conceptually grounded and practically oriented towards interpersonal and group relationships that evolve beyond academic achievement.
5. Strategies their personality traits towards community immersion and ethical behavior.

Unit 1 (6-hrs)

Communication Skills: Verbal and Non - Verbal communication - The active vocabulary - Conversational Etiquette - KOPPACT syndrome

Unit – II (6-hrs)

Emotional Skills: Emotional Intelligence - The five steps to Emotional Quotient - Self Awareness and Regulation - Empathy - Social Intelligence - stress management - coping with failures

Unit – III (6-hrs)

Functional Skills: Using the tools of communicatory and emotional skills - Resume writing - Preparation of Curriculum Vitae - interview skills - Acing the interview - Group dynamics - Mock interviews and Group discussions

Unit – IV (6-hrs)

Interpersonal Skills: Synergising relationships - SWOT analysis - SOAR analysis - The social skills - Time Management - Decision making - problem solving - prioritising and Implementation

Unit – V (6-hrs)

Personality Skills: Leadership skills - Attributes and Attitudes - Social leader vs The Boss - critical and creative thinking

Books for Reference:

1. Social intelligence: The new science of human relationships - Daniel Goleman; 2006.
2. Body Language in the workplace - Allan and Barbara Pease; 2011.
3. Student's Hand Book : Skill Genie - Higher education department, Government of Andhra Pradesh.



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EVALUATION CRITERIA

Examination (50 Marks)

- Self-Introduction(3-5 minutes Video Presentation) - 20 Marks
- Resume - 10 Marks
- Mock Interview - 20 Marks

- **Work Book (Each unit carries 10 marks) - 50 Marks**

1. Teacher who handles the subject will award 50 marks for work book based on the performance of the student.
2. On the date of examination, both the examiners (Internal & External) will jointly award the marks for the following categories:

- Self-Introduction - 20 Marks
- Resume - 10 Marks
- Mock Interview - 20 Marks

To assess the self-introduction, Examiners are advised to watch the video presentation submitted by the students. If they failed to submit the video presentation, the Examiners may direct the student to introduce himself orally and a maximum 10 marks only will be awarded.

Mock Interview Marks Distribution

(20-Marks)

Attitude (self interest, self confidence etc.) (4 Marks)	Physical appear- ance including dress code (4 Marks)	Communication Skills (6 Marks)	Answering questions asked from the resume and Exercise 10,13 and 14 of work book (6 Marks)
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**SOFT SKILLS DEVELOPMENT
STUDENT'S WORKBOOK**

Declaration

I I. RAJENTHIRA PRASATH of
B.Sc. CHEMISTRY - A with register number 81VCH014
declare that the contents of the work submitted for the external assessment of
Soft skills development course are my original work.

I. Raj 01/06/22
Signature of the student with date

I DR. ZAHIR HUSSAIN the faculty of soft skills development,
ensure that the work submitted by the student is only meant for his/her personal
development. No part of this work is revealed without the consent of the student
and all confidentiality is maintained.

Place: _____
Date: _____

Asheer
Signature of the Staff Incharge



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UNIT-1 COMMUNICATION SKILLS

Exercise-1 Which place do you like the most and why? (2.5 marks)

→ College

→ School

→ Home

→ Any other place

Home

Reason(s):

* A Home is place that gives comfort to everyone. It is because a home is filled with Love and Life. Much Like every Lucky person, I also have a home and a loving family. Through My Home essay, I will take you through what my home is like and how much it means to me.

* My home is situated in the city. It is not too big nor small, just the perfect size. My family lives in the home. It comprises of my father, mother, sister and grandparents. We live in our ancestral home so my home is village.

2.5



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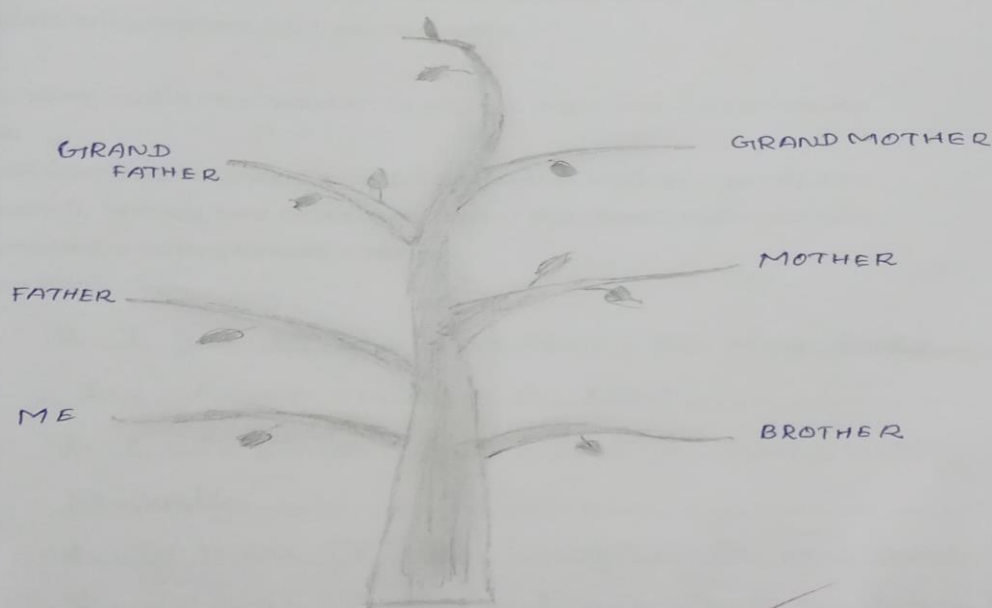
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Exercise-3 Draw your Ancestral Family Tree (2.5 marks)



2.5



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UNIT-2 EMOTIONAL SKILLS

Exercise-5 Read the following situations and Write about your feelings at that moment. (3 Marks)

- a) Imagine that you are in a canteen. Your class teacher comes to the canteen to have a cup of tea with his colleague. You greet your teacher with a smile and say "Good morning sir/madam." Your class teacher does not look at you or respond to your greeting.

*. I feel sad because why shouldn't he response to me did I do any worst thing or didn't he know me that I am is his student or he didn't noticed me.

- b) Imagine that you are working part-time at a Restaurant as a Server. When you approach a table or two in your restaurant, you notice one of the customers ordering very quickly often looks at his watch and seem to be hurried.

*. I consider that person who much hurry and I take his order fastly.



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UNIT-3 FUNCTIONAL SKILLS

Exercise 9: Imagine a situation where you are going to college by vehicle. Suddenly, middle of nowhere your vehicle tire was punctured; you do have tools for repairing it. Write down the steps to repair the puncture with a real-time photograph. (2.5 marks)

First I consider the traveller and shift them into other vehicle than I enquire puncture repair shop. I take the triangle that to indicate person at work. I take the tools and put the hydraulic jack on side of the punctured tyre side. Then I unscrew the tyre and take the tyre to the puncture repair shop. After repairing the tyre replace it and screw it or I use the spare tyre and after it I go to the puncture shop.

2.5



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Exercise-10 Create a Pamphlet for your Course / Business / Entrepreneurship and paste it. (2.5 marks)



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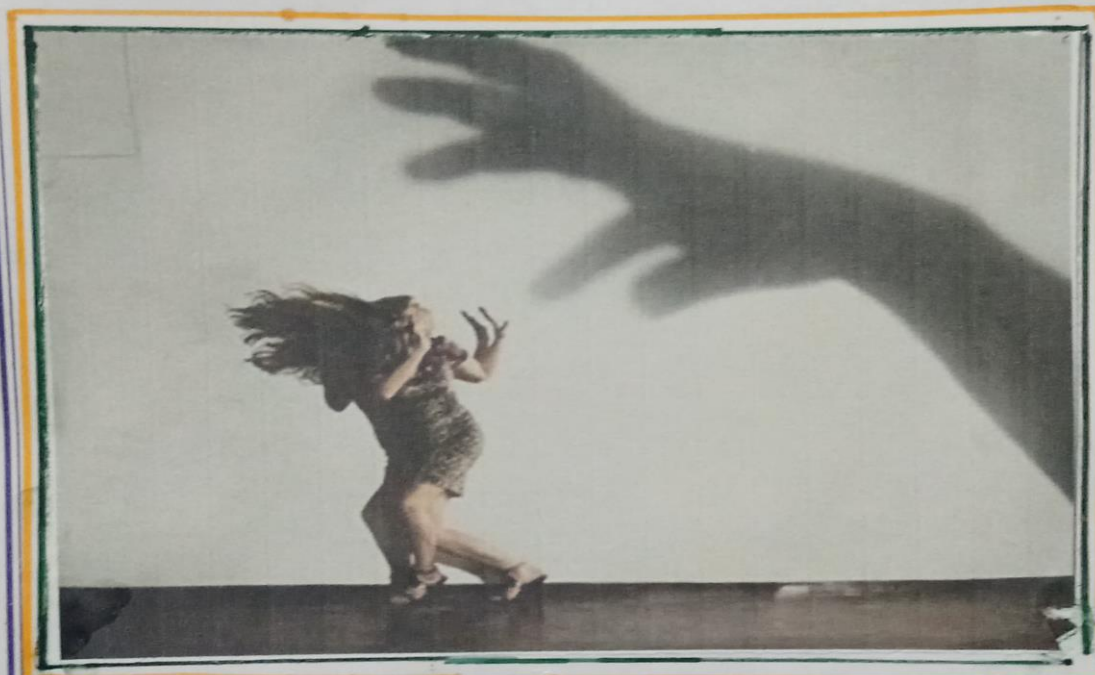
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Exercise-11 Paste a photograph that should have hidden meanings and explain in your own words. (2.5 marks)

PLAY WITH SHADOWS.



2.

20



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Exercise-12 You can do any of the social activities alone or in a group and take a photo and paste it here. Example:- Plant tree sampling. (2.5 marks)



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UNIT-4 INTERPERSONAL SKILLS

Exercise-13 Prepare a business proposal to start your own company. (2.5 marks)

SPECIAL OFFERS

We are Manufacturer of all Printing Gifts Like
Mug, T-Shirt, Key Chain, Phone Cover,
Led Frames, Cushion, Name Pendant,
Moving Lamp, Magic Mirror, Photo Frame etc.

SPECIAL GIFTS

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& PRINTING PRESS
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VALUE EDUCATION FOR MEN

Instruction : 05 Hrs

Activity : 25 Hrs

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20UCN1AE1	Ability Enhancement Course-I	Value Education For Men	2	2	100	100	-

Course Outcomes (COs):

At the end of the course, the learners will be able to

CO 1: Imbibe good values and clean habits in life.

CO 2: Understand their social responsibility and taught of their personal well being

CO 3: Recognize their significant role in family and the society

CO 4: Analyze the process of moral living along with changes in their biological System.

CO 5: Describe the importance of professional ethics in daily life.

Unit –I

(6-hrs)

VALUES IN LIFE: Purpose and philosophy of life – Need for values –five fold moral culture- Imbibing values: truth, loyalty, integrity, humility, trustworthy, considerate, not being greedy, clean habits and character building.

Unit –II

(6-hrs)

PERSONAL WELLBEING: Social responsibility - taming a healthy mind and body – personal hygiene - Balanced diet – meditation – yoga - positive thinking – introspection - a passion for Nature- Win-win strategy.

Unit –III

(6-hrs)

ROLE OF MEN IN FAMILY: As a responsible student – committed employee - loyal husband - dedicated father – fatherhood- sacrificing human – considerate true friend.

Unit –IV

(6-hrs)

MAN A SOCIAL BEING: A friendly neighbor - living a life with definite motives –emotions and moral desire- uncompromising will power- puberty- secondary sexual characters- marriage: Purpose – marital life- Harmony with spouse- fidelity towards spouse

Unit –V

(6-hrs)

PROFESSIONAL VALUES: More of a giver than a taker - being compassionate – patriotism - respecting culture - dependence on God – avoiding worry- professional ethics.



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References:

1. Value Education for health, Happiness and harmony, the world community service centre, Vethathri Publications
2. N. Venkataiah, Value Education, APH Publishing Corporation, New Delhi, 1998
3. K.R. Lakshminarayanan and M. Umamageshwari, Value Education, Nalnilam Publication, Chennai.

Web References:

1. <https://www.slideshare.net/humandakakayilongranger/values-education-35866000>
2. <https://www.ananda.org/blog/5-secrets-to-a-harmonious-marriage/>
3. <https://www.un.org/esa/socdev/family/docs/men-in-families.pdf>

Activity: I

- Assignments –Titles on Values to be identified by teachers (scripts not less than 20 Pages)
- Elocution- (Speech on Manners and good Habits for 3 to 5 minutes)
- Case Studies / Field Visit / Highlighting day today issues seen or heard
- Debating / Report Submission - Evils in Society
- Debating - Inspirational Talk -YouTube links.

Activity: II

SUBMISSION OF REPORT / PRESENTATION / VIDEO DOCUMENT PREPARATION

- Celebrating National Days
- Drug abuse & illicit trafficking
- Independence Day, Secularism
- Respecting Teachers (Teachers Day)
- National Youth Awakening Day (15th October)
- Father's Day / Mother's Day

Activity: III

- Album making / Poster presentation
- Proper use of e-gadgets, Ethics, Cyber ethics / Social media



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Activity: IV

- Preparation for Multiple Choice Questions and Quiz
- Attending family counseling meeting and report submission

EVALUATION COMPONENT : TOTAL : 100 MARKS

Component I : (25 marks)

Assignment-5 marks + Elocution-5 marks + Debating- 5 marks + Case Study- 10 marks

Component II: (25 marks)

Celebration of National days - submission of report / presentation / video document preparation for two events, each event 12.5 marks

Component III: (25 marks)

Album Making- 15 marks + Poster Presentation -10 marks

Component IV: (25 marks)

Multiple choice questions- 20 marks + Family counseling Report submission -5 marks



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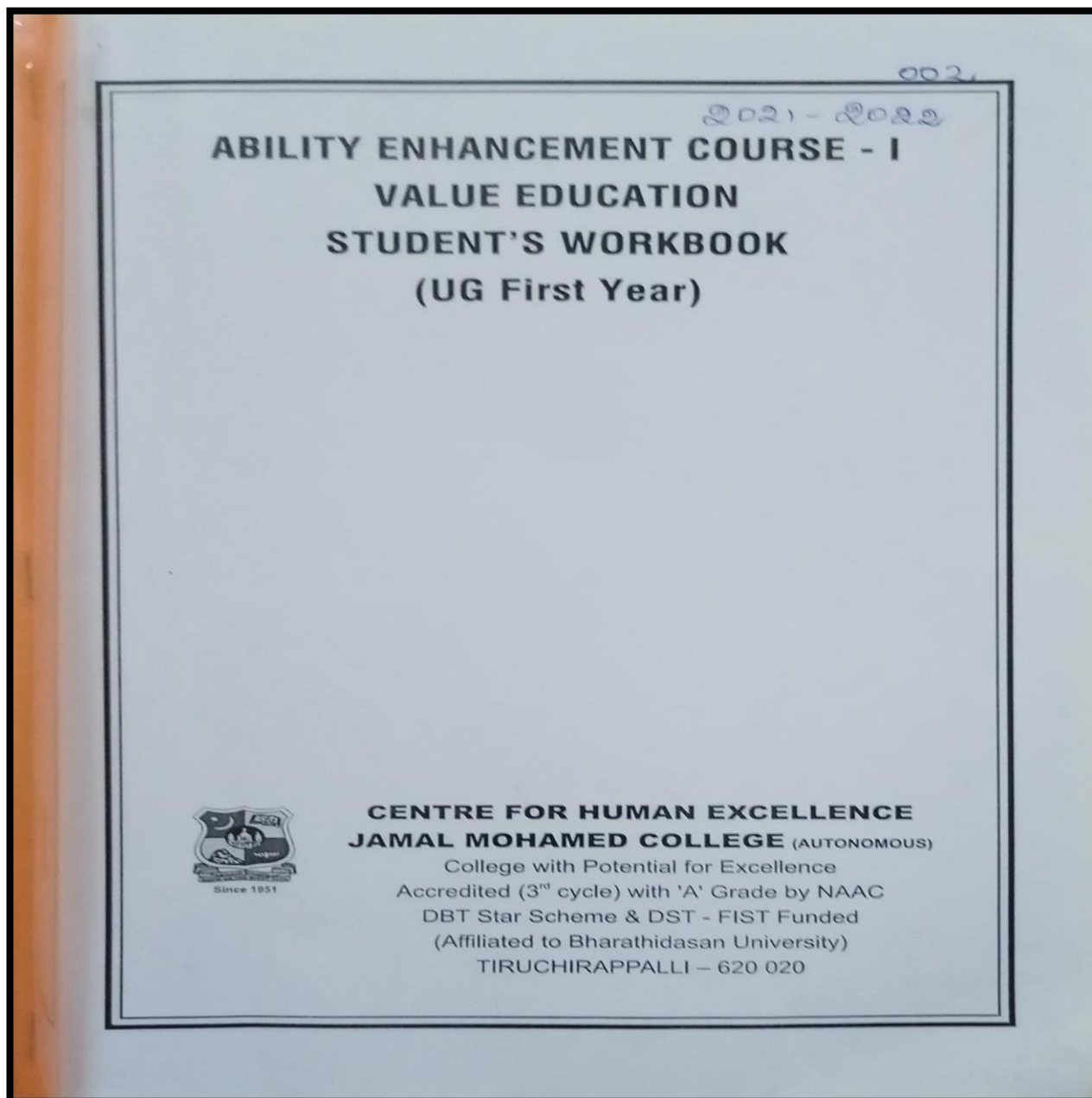
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ABILITY ENHANCEMENT COURSE - I

VALUE EDUCATION

STUDENT'S WORKBOOK

Declaration

I A. ABDUL RAHMAN of
..... with Register number 21UCH002
declare that the contents of the work submitted for assessment of Value
Education under Ability Enhancement course during the academic year (20-20)
are my original work.

Date

Signature of the Student

Abdul Rahman.A
Name



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Assignment (5 marks)

Topics :

Need for Values, Clean Habits, Character Building, Personal Hygiene,

Need for Yoga & Meditation, Significance of Marriage

clean habits.

Cleanliness refers to state of being clean. Cleanliness is a good habit most importantly, parents and teachers must encourage this habit from early on kids.

Importance of cleanliness.

In fact, one of the most important things for healthy living. The first and foremost importance of cleanliness is that it means the absence of disease. Similarly, cleanliness in our surrounding will mean the beauty and healthiness. It will also earn a good name for country in eyes of foreign tourists. You can enjoy good health and lead a active life style.

It will keep you physical fit also enhance your life span.

In short, cleanliness is vital for one's health and spiritual development. In addition to this it also essential for environment development of our country.



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Activity - II
National Day Celebration

Event - I (12.5 marks) Day :
Report :

National Mathematical Day.

The National Mathematics Day is celebrated on 22nd December, which is birth anniversary of Srinivasa Ramanujan. An Indian mathematician born to change the future of maths. The law of Averages and even logic of mathematical analysis were invented by this great mathematician.

Significance of Mathematics Day.

The main motto of mathematics day celebration is to make people aware of significance of number in life. According to Ramanujan "Number do freak".

Dr. Manmohan Singh, then Prime Minister of India, organized a Seminar as 2012 happened to be 125th birth anniversary of its great mathematician. He announced 22nd December as National Mathematics Day.

Life of Ramanujan.

Ramanujan was born in a middle class family. At an early stage he learnt Trigonometry with his own interest and slowly and steadily he developed his own theorems. The financial condition was not up to the mark and hence, he



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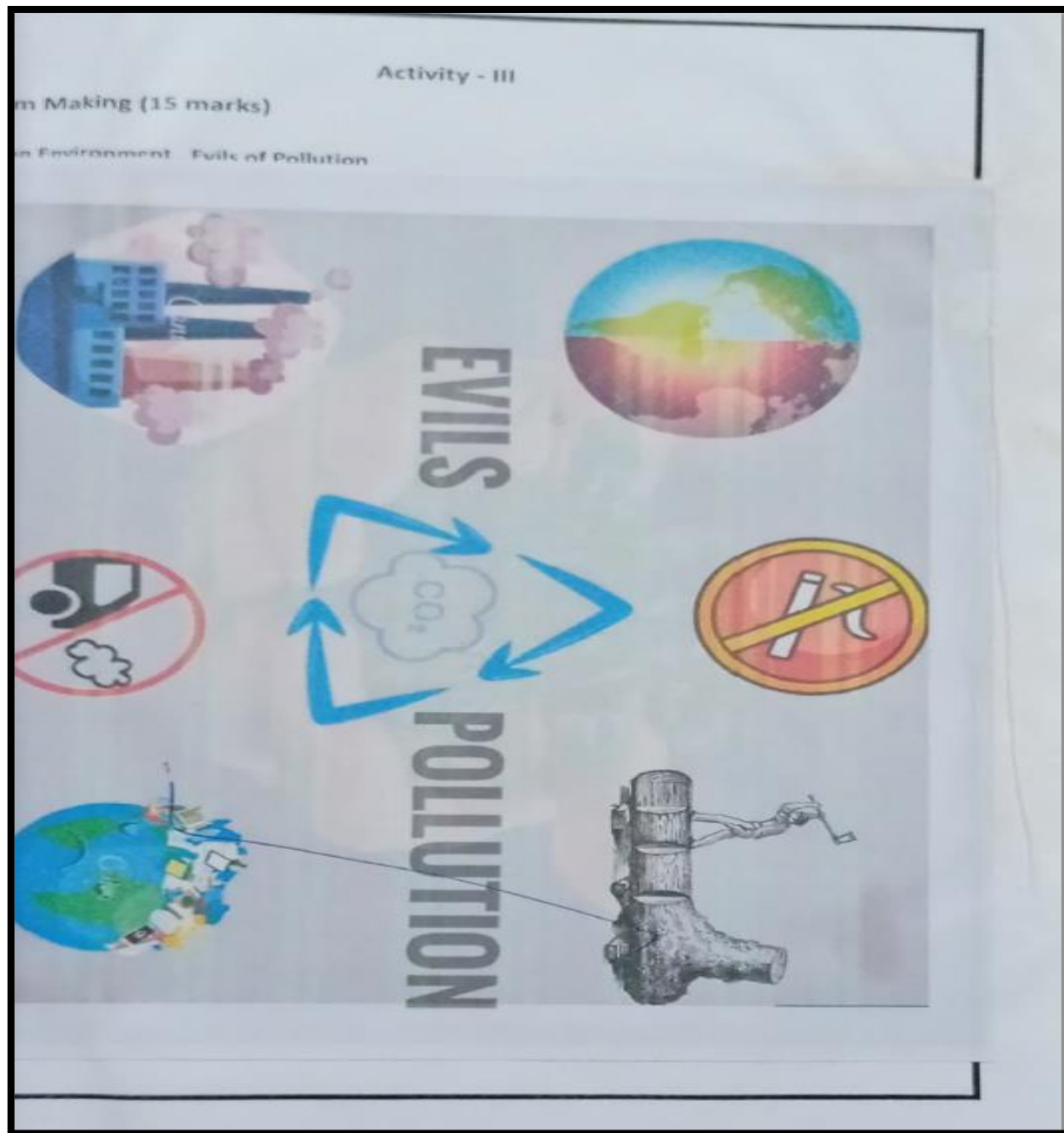
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Poster Presentation (10 marks)

BE A HUMAN FIREWALL

ROUND 1 Be Aware of Phishing and Scams

ROUND 2 Use Unique Passwords for Each Account

ROUND 3 Apply Patches and Updates

KNOCKOUT!

Don't be the weakest link, be the strongest defense against cyberattacks.

The poster is designed to look like a boxing ring with a brick wall background. It features three rounds of cybersecurity advice: Round 1 (Be Aware of Phishing and Scams) with a fishing hook icon, Round 2 (Use Unique Passwords for Each Account) with a padlock icon, and Round 3 (Apply Patches and Updates) with a shield icon. The 'KNOCKOUT!' section shows a person in boxing gear fighting a computer monitor displaying a skull and crossbones, representing a cyberattack. A banner at the bottom reads 'Don't be the weakest link, be the strongest defense against cyberattacks.'



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MCQ Quiz (20 marks) Activity - IV

1. The third electron shell is represented by the letter M
a) K b) M c) L d) N
2. The shape of s-Orbital is Spherical
a) Dumb cell b) cone c) spherical d) circular
3. Which of the following has highest ionization potential? F
a) Na b) Mg c) C d) F
4. Halogens belong to the P-block
a) s-block b) P-block c) d-block d) f-block
5. Which one of the following has the largest size? Br^-
a) Cl b) Cl^- c) Br d) Br^-
6. Effective Nuclear charge is $Z-S$
a) $Z-S$ b) $Z+S$ c) $A-Z$ d) $A+Z$
7. No. of gram of Solute / $V = ?$ Normality
a) Molarity b) Mass c) Normality d) Molality
8. No. of moles of Solute / Mass = ? Molality
a) Volume b) Molality c) Normality d) Molarity
9. Select the primary standard Na_2CO_3
a) HCl b) H_2SO_4 c) Na_2CO_3 d) NaOH
10. Which of the following belongs to +M Effect? $-\text{NH}_2$
a) $-\text{NO}_2$ b) CN c) $-\text{C}=\text{O}$ d) $-\text{NH}_2$



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VALUE EDUCATION FOR WOMEN

Instruction : 05 Hrs

Activity : 25 Hrs

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20UCN1AE1	Ability Enhancement Course-I	Value Education For Women	2	2	100	100	-

Course Outcomes (COs):

At the end of the course, the learners will be able to

CO 1: Imbibe good values and clean habits in life.

CO 2: Understand the role of women in various stages of life.

CO 3: Compare the biological changes effected in them due to growth in their teens and learn of personal hygiene.

CO 4: Describe the purpose of getting married and intricacies of marriage.

CO 5: Realize the importance of family life and appreciate the need for harmony with spouse.

Unit –I

(6-hrs)

VALUES IN LIFE: Purpose and philosophy of life – Need for values –five fold moral culture - Imbibing values: truth, loyalty, integrity, humility, trustworthy, considerate, not being greedy, clean habits and character building.

Unit –II

(6-hrs)

FAMILY: Nuclear – cluster – significance - social functions - changing trend - role of women in family - obedient daughter - purposeful youth- dedicated wife - caring mother.

Unit –III

(6-hrs)

PUBERTY: Need of knowledge of menstruation- menstrual symptoms – handling – menstrual disorder - maintaining good personal hygiene - motherhood- Stages of pregnancy- post pregnancy care.

Unit –IV

(6-hrs)

MARRIAGE: Types of marriage - purpose of marriage- love and infatuation – need for marital preparation - pre and post marital counseling - conflicts in marital life - divorce single parenthood.

Unit –V

(6-hrs)

HARMONY WITH SPOUSE: Husband and wife relationship - fidelity towards spouse- relationship among the family members. Tenets of bride for healthy family – kindness, respect, patience, care, love.



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1. Value Education for health, Happiness and harmony, the world community service centre, Vethathiri Publications
2. N. Venkataiah, Value Education, APH Publishing Corporation, New Delhi, 1998
3. Betty, Carten and Meg Goldric, The Changing family life style - A Framework for Family Therapy, 2nd Edition, 2000.
4. Marie, Madearentas, Family Life Education, CREST-Centre for research education service training for family promotion, Bangalore, 1999.

Web References:

1. <https://www.slideshare.net/humandakakayilongranger/values-education-35866000>
2. <https://www.ananda.org/blog/5-secrets-to-a-harmonious-marriage/>
3. <https://www.nap.edu/read/2225/chapter/14>

Activity: I

- Assignments –Titles on Values to be identified by teachers (scripts not less than 20 Pages)
- Elocution- (Speech on Manners and good Habits for 3 to 5 minutes)
- Case Studies / Field Visit / Highlighting day today issues seen or heard
- Debating / Report Submission - Evils in Society
- Debating - Inspirational Talk -YouTube links.

Activity: II

SUBMISSION OF REPORT / PRESENTATION / VIDEO DOCUMENT PREPARATION

- Celebrating National Days
- Drug abuse & illicit trafficking
- Independence Day, Secularism
- Respecting Teachers (Teachers Day)
- National Youth Awakening Day (15th October)
- Father's Day / Mother's Day

Activity: III

- Album making / Poster presentation
- Proper use of e-gadgets, Ethics, Cyber ethics / Social media

Activity: IV

- Preparation for Multiple Choice Questions and Quiz
- Attending family counseling meeting and report submission



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EVALUATION COMPONENT: TOTAL : 100 MARKS

Component I: (25 marks)

Assignment-5 marks + Elocution-5 marks + Debating- 5 marks + Case Study- 10 marks

Component II: (25 marks)

Celebration of National days - submission of report / presentation / video document
preparation for two events, each event 12.5 marks

Component III: (25 marks)

Album Making- 15 marks + Poster Presentation -10 marks

Component IV: (25 marks)

Multiple choice questions- 20 marks + Family counseling Report submission -5 marks



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**ABILITY ENHANCEMENT COURSE - I
VALUE EDUCATION
STUDENT'S WORKBOOK
(UG First Year)**



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JAMAL MOHAMED COLLEGE (AUTONOMOUS)**

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Accredited (3rd cycle) with 'A' Grade by NAAC
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(AUTONOMOUS)

Tiruchirappalli – 620 020

ABILITY ENHANCEMENT COURSE - I

VALUE EDUCATION

STUDENT'S WORKBOOK

Declaration

I am S. AAIYSHA MARIAM of
I.Bec: CHEMISTRY with Register number 22 UCH107
declare that the contents of the work submitted for assessment of Value
Education under Ability Enhancement course during the academic year (20-20)
are my original work.

Date 07-11-2022

S. Aaiysha Mariam
Signature of the Student

S. AAIYSHA MARIAM
Name



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FINAL EVALUATION SHEET

Scheme of Evaluation

Name of the Student: S. AAIYSHA MARIAM

Register number: 22UCH107

Class: Ist year B.Sc. CHEMISTRY Dept CHEMISTRY

S.No.	Description	Maximum marks	Marks awarded	
1.	Activity - I	Assignment 5		24
		Elocution 5	✓	
		Debating 5		
		Case Study 10		
2.	Activity - II (National Day Celebration)	Event - I 12.5		24
		Event - II 12.5		
3.	Activity - III	Album Making 15	✓	22
		Poster Presentation 10		
4.	Activity - IV	MCQ 20	✓	23
		Family Counselling		
		Report Submission 5		
	TOTAL MARKS	100		93

Signature of the Evaluator

K. M. R.
7/11/22



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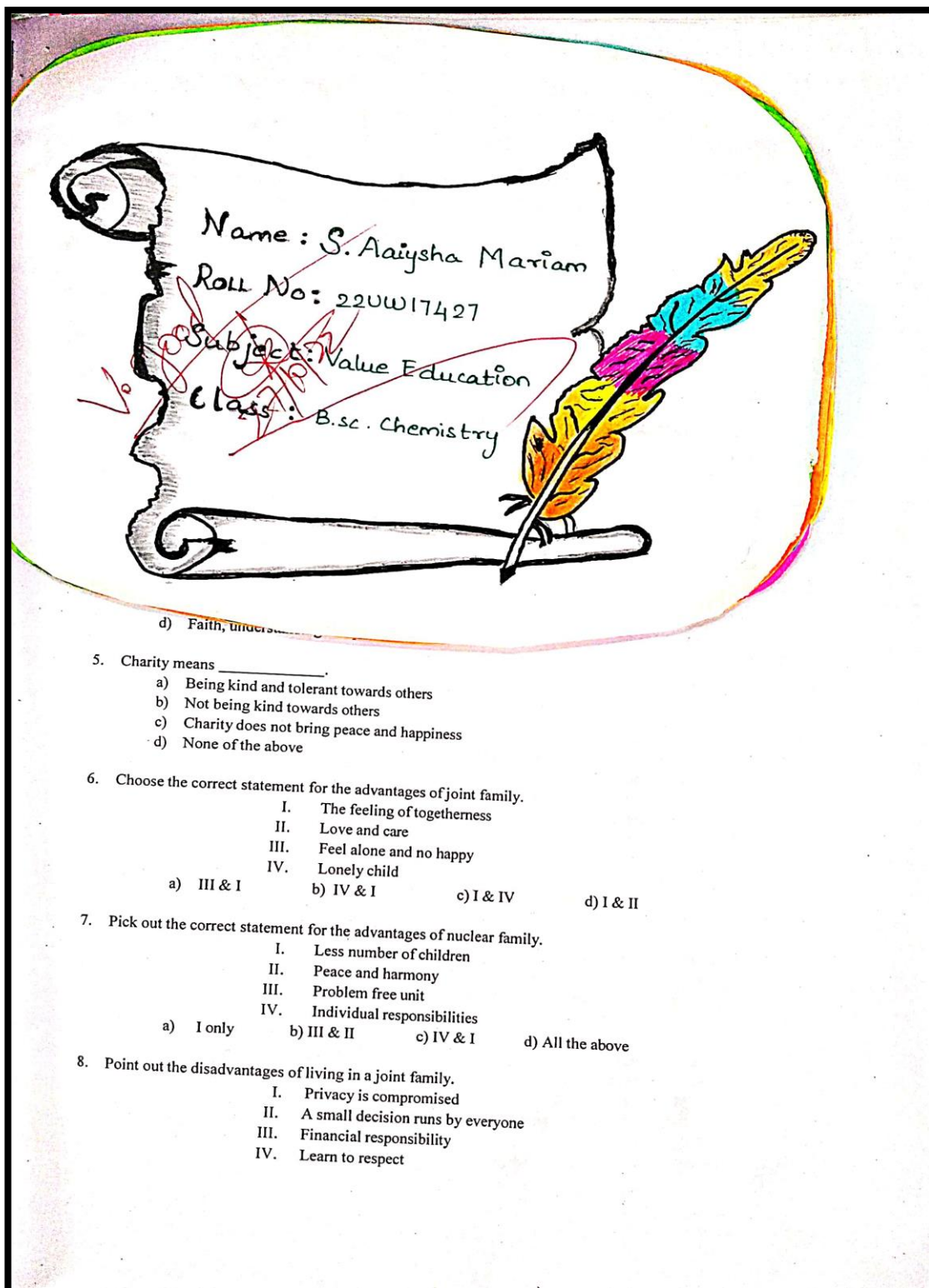
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- a) II & IV b) II & III c) IV & I d) I, II & III
9. What are the factors responsible for change in Indian family structure?
I. Industrialisation
II. Urbanization
III. Social legislations
IV. Education
a) I & III b) II & III c) I & IV d) All the above
10. What are the roles of women in the family?
I. Dedicate wife
II. As a manager of family income
III. As an administrator and leaders of the household
IV. Non caring mother
a) I & II b) III & IV c) IV & I d) I, II & III
11. At what age group women's have their first puberty.
a) 9 to 13 age
b) 13 to 16 age
c) 14 to 18 age
d) 16 to 19 age
12. Women's usually have their period until the _____ age.
a) 35 to 40
b) 45 to 50
c) 50 to 55
d) 55 to 60
13. The symptoms of second trimester pregnancy stage is
a. you gain 1 or 2 kilogram
b. You have severe back pain
c. You gain about 6 kilogram
d. Feeling harder to breathe
14. Which of the following nature is not suitable for love?
a. love is more than physical attraction
b. love survives arguments
c. love is draining
d. love can last a long time
15. Which of the statement is false ?
a. Crushes are powerful
b. crushes hide the other person's flaws
c. Crushes give you energy
d. crushes makes you jealous
16. The tip to improve Husband wife relation to live a great life is
a. Be honest and open with each other
b. Do not compromise with each other
c. React fastly to all situations
d. do not ignore the conflict
17. Why arranged marriage is consider better than love marriages in Indian society?
a. Economic support
b. Moral support
c. Relationship can be maintained from the society
d. all the above
18. Find out the disadvantage of love marriage



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- a. Family support
 - b. Expectations
 - c. Dispute
 - d. both b and c
19. Which of the following is not a good quality of good partner in marriage ?
 - a. Honesty and Integrity
 - b. Respect and independence
 - c. Empathy and humility
 - d. humourless and uncaring
20. The third trimester of pregnancy is on
 - a. 12 to 30 weeks
 - b. 22 to 40 weeks
 - c. 08 to 17 weeks
 - d. 27 to 40 weeks
21. A good harmonious relationship with husband is
 - a. Disadvantage
 - b. Boundaries
 - c. Immaturity
 - d. none of these
22. The main components of love is
 - a. passion
 - b. intimacy
 - c. commitment
 - d. all of above
23. The system under which the parents decide about life partners of their children is known as
 - a. probationary marriage
 - b. Arranged marriage
 - c. love marriage
 - d. polygamy
24. Divorce takes place when
 - a. both the boy and girl inform their parents.
 - b. society agrees that marriage stands terminated
 - c. termination is legally accepted.
 - d. both the boy and girl separate personally
25. A system of marriage in which one woman marries more than one husband is known as
 - a. polygamy
 - b. polyandry
 - c. exogamy
 - d. monogamy



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Ability Enhancement Course – I - Value Education 22 06 17 J1 27

Answer sheet for Quiz

Class : I – B.Sc Chemistry

Subject Code : 20UCN1AE1

Name : S. ADITYA MARIAM

Reg. No : 22UCH107

Q. No	a	b	c	d
1.	☐	☐	☐	☒
2.	☐	☐	☐	☒
3.	☐	☐	☒	☐
4.	☐	☐	☐	☒
5.	☒	☐	☐	☐
6.	☐	☐	☐	☒
7.	☐	☐	☐	☒
8.	☐	☐	☐	☒
9.	☐	☐	☐	☒
10.	☐	☐	☐	☒
11.	☐	☒	☐	☐
12.	☐	☒	☐	☐
13.	☐	☐	☒	☐
14.	☐	☐	☒	☐
15.	☐	☐	☒	☐
16.	☒	☐	☐	☐
17.	☐	☐	☐	☒
18.	☐	☐	☐	☒
19.	☐	☐	☐	☒
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22.	☐	☐	☐	☒
23.	☐	☒	☐	☐
24.	☐	☐	☒	☐
25.	☒	☐	☐	☐

23
25
27

Staff Incharge
Dr. K. Mahmoodah Parveen
Kottal Per
Dr. R. Arulnangal
R. Arulnangal



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Name : S. Aaiysha
Roll NO : 22UW17427
Subject : Value Education
Class : B.sc. Chemistry I
Topic : Independence Day.
✓ good



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Good Manners :-

Since our childhood we were always taught good manners. Our parents always insisted us to enlist good manners. moreover they always tried their best to teach us to enlist good manners. moreover they always tried their best to teach us everything to become a good human being. Good manners are important for a person to live in a society. Furthermore if a person wants to be loved by everyone then he must know how to behave. The difference between an educated person and an illiterate person is not of knowledge. But the way he speaks & act. So the presence of good manners can make a person gentleman. Yet if a person is lacking it then even the most education person will not be a good man. Good manners hold great importance in a person's life. In order to become successful in life. one should always take care of how he interacts. Various businessmen & successful people are achieving heights. This is because of their good manners & skills. If a boss does not speak properly with his employees then they will leave the job. Therefore good manners are essential in any field of life.

Our parents have always taught us to respect our elders. Because if we won't respect our elders respect also comes in good manners. Respect is one of the most essential needs of a person. moreover many people work Really hard to earn respect. Since I was a child I have always heard from my



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parents that Respect is the utmost thing you should aim for. Therefore everyone deserves respect life.

Good manners at School :-

In school a child should Respect his teachers seniors. Furthermore he should listen to what teacher is saying because they are his mentors. moreover, the child should be well dressed hygienic. Furthermore a child should always carry a handkerchief in order to maintain hygiene. The child should always be punctual. so that he does not waste others time. Also you should never take others things without permission. Since there are many children studying in the school. you should not push each other while standing in a queue.

Good manners at Home :-

Most importantly you should respect your parents at home. Always wish them "good morning" or "good night" at the beginning or end of the day. Moreover you should brush your teeth or take bath daily. so you may maintain proper hygiene.

Wash hands before eating your meal chew your food well or eat with closed mouth. Also you should take permission from parents before going out of the house. Above all you make use of the words "Thank you" or "please" in your speech.



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Good manners at work for elders. You should respect your co-workers. Also you should try to complete yours on time. Furthermore you should be punctual in the office. Do not gossip while working & do not distract others.

Moreover you should not interfere in other's work. Consider your junior employees & help them if they have any problem. At last do not fall into corruption & do your work with honesty & diligence.

In order to live in a society one should have good manners. This maintains a peaceful environment & people will like you as a human being.

We can enlist good manners by reading books & learning from it. Moreover you can also join personality development classes. They teach all the good manners & make you a better person.