

Claridge Dynamic Science - 8

CHAPTER 1: CROP PRODUCTION

Formative assessment

1. Oral Questions:

- (a) **Controlling Weeds:** Some unwanted plants also grow along with main crop which hamper the proper growth of crop and reduce the production. These are called weeds and their removal is called weeding which is carried out by following methods:
- (i) Uprooting the weeds manually
 - (ii) By using tools (spade or trowels or harrows) for removing weeds.
 - (iii) By using chemicals (weedicides) which destroys the weeds, but care is needed for using weedicides as generally they are poisonous.
- (b) **Advantages of Ploughing:**
- (i) It loosens and aerates the soil which in turn facilitates deeper penetration of roots.
 - (ii) It helps the growth of microorganisms and worms and thus maintains the fertility of soil.
 - (iii) Only top layer of soil supports plant growth therefore ploughing mixes the organic matter and nutrients evenly throughout the soil and proper growth of plants.
- (c) **Importance of Transplantation:** For certain plants, the seeds are not directly sown in the fields. They are first sown in nurseries and then transplanted in the field. This method has following advantages.
- (i) Farmer can select healthier seedling.
 - (ii) The development of root and shoot system is proper.
 - (iii) Proper spacing between plants is useful for sunlight, water and nutrients rice, chillies, to mets, onion etc. are grown by transplantation method
- (d) **Zayad Crops:** Zayad crops (summer season) include Sunflower, Moong, Gourd, water melon, musk melon, flowers and vegetables.

2. Tick (3) the Correct answer:

- (a) (i) Kharif crops, (b) (ii) Rabi Crops, (c) (ii) Lodging, (d) (iii) Threshing.

3. Name these:

- (a) Kharif, (b) Rabi, (c) Zayad, (d) Crumbs

Summative Assessment

1. Write (T) for true and (F) for false

- (a) F, (b) T, (c) T, (d) T, (e) T.

2. Match the following:

- | | |
|------------|--------------|
| (a) Bean | (iii) Legume |
| (b) Cotton | (v) Fibre |

- | | |
|------------|------------------|
| (c) Plough | (iv) Ploughshare |
| (d) Honey | (ii) Honey bee |
| (e) Rice | (i) Cereal |

3. **Answer the following questions:**

- (a) **Kharif and Rabi:** Kharif crops like paddy, maize, Soyabean, cotton groundnut are sown in rainy season (June-July) and harvested in the beginning of winter, whereas Rabi crops like; wheat Gram, Mustard, Linseed, beans etc. are sown in winter season and harvested before summer.
- (b) **Advantages of Levelling:**
- (i) Levelling compresses and sets the top soil properly so that erosion is minimised.
 - (ii) Distribution of water in the field is uniform and proper when ground is levelled.
 - (iii) It helps in proper sowing and uniform growth of crop plants.
- (c) **Transplantation Technique:** For certain crops, the seeds (seedlings) are not directly sown in fields, but at first they are sown in nurseries and then healthy seedlings are selected and transplanted in the field. This method of transplantation has following advantages:
It allows the selection of healthy seedlings and the development of root and shoot systems is much better. Besides it, there is proper spacing between plants for proper amount of Sunlight, water and nutrients. Rice, chilies, brinjal, onion etc. are grown by transplantation technique.
- (d) **Crop rotation:** It is a method by which nutrients of the soil are replenished by Crop Rotation method. In this method same crop is not cultivated each year. Instead another crop is grown. For example; in North India, legumes are grown one season and wheat in next season. The legumes help replenishment of nitrogen. The bacteria for nitrogen fixation live in the root nodules of crops like; pulses, pea, beans etc. which convert atmospheric nitrogen to soluble nitrates.
- (e) **Difference between manure and fertilizer:** Manure is a natural substance obtained by decomposition of bio-waste whereas fertilizers are inorganic salts manufactured in chemical factories. Manure adds humus to soil and improves the water retention capacity. Whereas this advantage is not possible in fertilizer. However fertilizers are more readily absorbed by soil. Manure is not always available and it is bulky too and is required in more quantities because it is not rich in nutrients as compared to fertilizers.

CHAPTER 2: MICRO ORGANISMS

Formative Assessment

1. **Oral Questions:**

- (a) Because of their extremely small size, the micro-organisms cannot be seen with naked eyes.
- (b) The micro organisms decompose organic waste consisting of vegetable peels, plant's residue and animal waste.
- (c) Bacteria act as a natural scavengers since they decompose the organic waste quickly.
- (d) Some of the protozoa like Entamoeba, Tryponosoma, plasmodium, Giardia cause different diseases in humans, so they are considered not so good, inspite of fact that some other protozoa play a helpful role of clearing up environment.

2. **Tick (3) the Correct answer:**

- (a) (i) Chlorella, (b) (i) Volvox, (c) (ii) Brown Algae (d) (i) Viruses, (e) (i) Vaccine.

3. **Ring the odd one:** (a) Lactobacillus (b) Denitrification (c) Fermentation, (d) Protozoans, (e) Anabaena.

Summative Assessment

1. **Fill in the blanks:**

- (a) Curd contains bacterium **Lactobacillus**.
- (b) Bacteria like salmonella and staphylococci cause **food poisoning**.
- (c) The **protozoans** are the most primitive and simplest animal.
- (d) Same as (b) above in this question.
- (e) The disease causing microorganisms are known as **Viruses**.

2. **Write (T) for true and (F) for false**

- (a) T, (b) T, (c) F, (d) T, (e) T.

3. **Match the following:**

- | | |
|---------------------------|---------------------------------|
| (a) Nucleic Acids | (iii) DNA and RNA |
| (b) Nitrates and Nitrites | (vi) Soluble form of nitrogen. |
| (c) Antibiotie | (i) Erythromycin |
| (d) Antibodies | (vii) Produced by immune system |
| (e) Alexander Fleming | (ii) Penicillin |
| (f) Harmful Algae | (viii) Cepaleuros |
| (g) Algae chlorella | (ii) Antibiotic chlorellin |
| (h) Unicellular Algae | (v) Chlamydomones |

4. **Answer the following questions:**

- (a) Major groups of Micro-organisms are: (1) Bacteria, (2) Fungi, (3) Protozoa and (4) Algae. the viruses are different from other micro-organisms as they reproduce only inside the host.

- (b) Micro- organism that fix nitrogen in the soil are: Rhizobium, clostridium, Azotobacter, Nitrosomonas and Nitrobacter also support the process of nitrogen fixation.
- (c) Biological Nitrogen fixers are the micro-organisms which are present in root legumes such as beans and pea. The micro-organisms like rhizobium, clostridium, Azolobacter, Nostoc and Anabaena are common nitrogen fixers.
- (d) The disease causing micro-organisms are called the pathogens.
- (e) The microbial diseases that can be spread from an infacted person to a healthy person through food, water, air or physical contact are called communicable diseases. Some of the communicable diseases are common cold, influenza, eye-flue, cholera, Tuberculosis, etc.

CHAPTER 3: MATERIALS IN DAILY LIFE

Formative Assessment

1. **Oral Questions:**

- (a) The NYLON is obtained from amide molecules.
- (b) Raw material for preparation of NYLON are obtained from petroleum.
- (c) Besides naturally occurring fibres like cotton, wool, jute and silk, some fibres are made from chemicals by man in factories, for example Nylon, Terylene, Teflon, polyesters, Accylene etc. and they are called man-made fibres.
- (d) Plastics are non-corrosive because: (i) They are hardly affected by strong chemicals like acids and alkalies and (ii) they do not decompose under any weather conditions, i.e, most of them are non-biodegradable.

2. **Tick (3) the Correct answer:**

- (a) (iii) Nylon, (b) (ii) PP, (c) (i) Carbon, (d) (ii) polyethylene
- (e) (ii) Nylon.

3. **Name these:**

- (a) Synthetic fibre which is used as substitute of wool—Terywool
- (b) A wrinkle resistant synthetic fibre—Terylene
- (c) The Fibres Made by human beings—Synthetic Fibres.
- (d) The first man-made material made from cellulose—Rayon

Summative Assessment

1. **Fill in the blanks:**

- (a) Teflon has a very **high** melting point.
- (b) Most synthetic fibres **easily** catch fire.
- (c) Jute and Cotton are **Natural** polymers.
- (d) The synthetic fibre that resembles wool in its properties is **acrylic fibre**.
- (e) Most synthetic fabric have high **lusture**.

2. **Write (T) for true and (F) for false**
(a) F, (b) F, (c) T, (d) F, (e) T.
3. **Answer the following questions:**
- (a) **Polymers:** A Polymer is a large molecule comprised of repeating structural units joined together. There may be several hundreds of the monomer in a polymer. Polymers are of two types:
(i) Natural polymers like; jute, cotton, silk and wool.
(ii) Synthetic polymers like; rayon, nylon, terylene, teflon, polythene, polypropylene etc.
The synthetic polymers can be either fibre or plastic.
- Advantages of Synthetic fibres:**
Synthetic fibres can be produced on large scale. These are more durable than natural fibre. These have high lusture and do not turn yellow with age and are easy to clean and dry. Also does not require ironing as they do not shrink.
- Disadvantages of Synthetic fibres:**
They do not absorb sweat and so are very uncomfortable in summer. The synthetic fibres easily melt and burn and form small sticky beads at high temperature. Also they get electrically charged in dry weather and this causes skin problems. Moreover they are non-biodegradable and cause pollution.
- (b) **Uses of Plastics & Problems Associated:**
Plastics are used in every sphere of life right from small capsules of medicine to automobile parts. Some of the important uses of plastic are as below:
(i) As plastic parts do not rust or easily dent, so they are replacing metals in aeroplanes, cars and several mechanical devices.
(ii) For packaging food articles, making textile in place of cotton, wool and silk.
(iv) Handles of cooking wares, containers and films for microwave ovens, plastic insulation material in refrigerator, covers of electrical items, cords, wiring etc.
(v) For making bottles, buckets and containers for storage of water besides tumblers and cups for drinking water.
- Disadvantages of plastics excessive use are:**
(i) Thrown away plastic items provide home for many disease causing germs.
(ii) When dumped in water, plastics cause water pollution by toxic substances and affect the life of aquatic animals and their reproductive system.
(iii) Plastic when buried in soil, cannot be decomposed by microorganisms and affects the plant and vegetation of the area

- (iv) On burning, plastics produce toxic gases and smoke and cause air pollution.
- (c) **Thermoplastics and Thermosetting plastics:**
- (i) **Thermoplastics:** These can be melted by heating and moulded into desired shapes and sizes any number of times. Polythene, polystyrene, acrylic etc. are thermoplastics.
- (ii) **Thermosetting Plastics:** These are the plastics from which materials are obtained by gently heating and moulding only once. These cannot be remoulded again and again and the moulding is permanent. Such plastics are harder and stiffer. Bakelite, formica, sunmica, malamine and urea-formaldehyde are few examples of Thermosetting plastics.
- (d) **Synthetic Fibres are superior to natural fibres in following respect:**
- (i) These can be produced on large scale and cost less.
- (ii) Synthetic fibres have high lusture and do not turn yellow with age.
- (iii) Synthetic fibres are strong and durable and last longer.
- (iv) They are easy to clean and dry.
- (v) Being much finer, the texture of synthetic fibre is very soft.
- Synthetic fibres are inferior to natural fibres in following respects:**
- (i) Unlike natural fibres, they do not absorb sweat and are uncomfortable during summer and rainy season.
- (ii) They easily melt and burn to form small sticky beads at high temperature and carry a risk of burns in kitchen.
- (iii) They get electrically charged in dry weather which can cause skin problem for some people.
- (iv) Synthetic fibres are non-biodegradable and hence cause lot of pollution.

CHAPTER 4: METALS AND NON-METALS

Formative Assessment

1. **Oral Questions:**
 - (a) **Malleability:** The property of metals due to which they can be beaten into sheets, is called its malleability. Metals are generally malleable. Examples are Gold, Silver, Copper etc. Metals like zinc, Arsenic and Antimony are not malleable.
 - (b) **Ductility:** The property of metals due to which they can be drawn into thin wires, is its ductility. Metals in general are ductile, e.g., Gold, Silver, Copper. However Zn, As and Sb are exceptions.
 - (c) **Reactive Metals** are found as compounds as they easily combine with non-metals like oxygen, sulphur, chlorine etc. It is because of their electronic configuration in which the outer electron shell is found incomplete.
 - (d) The least reactive metal is platinum and the most reactive metal is potassium (also sodium).

2. **Tick (3) the Correct answer:**
(a) (ii) Sulphur, (b) (iv) Bad conductor, (c) (i) Red Phosphorus (d) (i) Ag, (e) (iii) Iron.
3. **Ring the odd one:**
(a) Sulphur, (b) Calcium (c) Brittle, (d) CO₂

Summative Assessment

1. **Fill in the blanks:**
(a) Magnesium will displace zinc from zinc sulphate solution.
(b) Metals usually displace Hydrogen from acids.
(c) Metals are good conductors of heat and electricity.
(d) Melting and boiling points of most metals are higher than non-metals.
(e) Purity of gold alloys are measured by carats or karats.
2. **Write (T) for true and (F) for false**
(a) T, (b) T, (c) F, (d) F, (e) F.
3. **Answer the following questions:**
(a) **Characteristics of Elements & Occurrence:** The properties of an element depends upon configuration of electrons in their nuclear shells because atoms of elements react with each other when electrons form bonds. Shells of other elements are fully complete whereas shells of other elements are not fully complete. Helium, Argon, krypton, Neon and xenon are inert elements.
At present more than 115 elements are known, are naturally occurring elements and remaining are artificially synthesised.
Most of the elements are solid, Mercury, Bromine and gallium are liquids and a few are gases at room temperature. The elements are classified as Metals and Non-metals. Eight elements make up almost 99% of the Earth's crust.
- (b) **Physical Properties of metals:**
Important physical properties of metals are (i) State, (ii) Luster, (iii) Hardness, (iv) Density, (v) Malleability, (vi) Ductility, (vii) Melting and Boiling points, (viii) tensile strength, (ix) Conductivity (x) Colour, (xi) Sonority, (xii) Solubility and (xiii) Opacity.
Specific Properties of Metals are described below:
(i) **State:** All metals except Mercury and Gallium are solid at room temperature.
(ii) **Luster:** When freshly cut, metals have a brilliant sheen (luster) over their surface. Because of this property metals can be polished.
(iii) **Hardness:** Metals are generally hard. Some metals like sodium, potassium etc. are soft and can be cut with a knife.

(iv) **Density:** Most of the metals (except Potassium and Sodium) have high density.

(v) **Malleability:** Metals can be beaten to thin sheets due to malleability. Zinc, Arsenic and Antimony are exception.

(vi) **Ductility:** Because of this property, metals can be drawn into thin wires. However Zinc, Arsenic and Antimony are exceptions.

(vii) **Melting and Boiling Points:** The m.p. and b.p. of metals in general in high except potassium, sodium, mercury and gallium.

(viii) **Tensile Strength:** To bear a lot of strain without breaking is termed as tensile strength of metal. Generally metals have high tensile strength. Zinc, Arsenic and antimony are exceptions.

(ix) **Conductivity:** Metals are good conductors of heat and electricity. Silver, copper and aluminium have very good conductivity.

(x) **Colour:** Metals in general have silvery grey colour. But gold is yellow and copper is reddish.

(xi) **Sonority:** Metals make ringing sounds when struck.

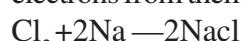
(xii) **Solubility:** Metals are not soluble in liquids, unless they react with it. For example; sodium reacts with water and then it dissolves.

(xiii) **Opacity:** Metals are opaque in general as light cannot pass through.

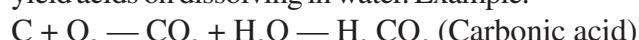
(c) **Chemical Properties of Non-metals:**

Non-metals have tendency to accept electrons and so they get converted to negative ions, All chemical properties of non-metals are based upon this characteristics. However non-metals combine with other non-metals by sharing the electrons. Main chemical properties of non-metals are described below:

(i) **Metals:** Non-metals form ionic compound with metals by accepting electrons from them. Example:

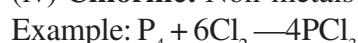


(ii) **Oxygen:** Non-metals react with oxygen to form oxides. These oxides yield acids on dissolving in water. Example.



(iii) **Acids:** Non-metals do not release hydrogen from acids but accepts electrons from them. But on boiling nitric acid reacts with sulphur to form SO_2 , NO_2 etc.

(iv) **Chlorine:** Non-metals form chlorides on reaction with chlorine.



(v) **Hydrogen:** With hydrogen Non-metals form hydrides by sharing electrons. Example of hydrides are NH_3 , H_2S , HCl , CH_4 etc.

(d) **Uses of Metals and Non-metals in Daily life:**

Metals: Metals and Non-metals as such are used in small quantities, but as compounds or as some other items are used extensively. Iron, Aluminium,

Copper, Silver, gold etc. are used as such and as some product. Copper and Aluminium are used as electrical conductors and utensils. Domestic and industrial tools and machineries are made of Iron. Mercury is used in thermometers. Sodium, Titanium, Zirconium are used in atomic energy, science and technology. Titanium and its alloys are used in military equipments, marine instruments etc. Iron is mostly used as steel for machines, bridges, buildings, ships etc. and as stainless steel for utensils and equipments for chemical industries. Sodium chloride is widely used in food materials. Caustic soda, washing soda etc. are manufactured from salt. Plaster of Paris, bleaching powder, baking soda etc. are utilized extensively. Washing soda is used for making glass and borax. Plaster of Paris is used as sealing agent in laboratory and in orthopedic surgery etc.

Non- Metals: Red phosphorous is used in matchsticks, fireworks. Phosphorus is an important constituent of fertilizers. Silicon is widely used in semi-conductor, in making glass and cement. Silicon carbide is used for making cutting tools for hard rocks etc. Sulphur is used for manufacturing sulphuric acid and medicines. Carbon exists as black coal as well as brilliant Diamond. As graphite it is used in pencil leads.

- (e) **Activity Series:** Some metals are more active than other. For example; iron rusts slowly, gold does not tarnish at all whereas sodium or potassium react vigorously. On the basis of reactivities we can arrange metals from more reactive to less reactive. Thus potassium being most reactive will be at one end, iron will be somewhere in the middle and platinum will be at the least reactive position. This arrangement will make a series of metals in order of their reactivities. This series is called Activity Series. The more reactive metal will displace the less reactive metal from its solution. Thus iron will displace copper from solution of copper sulphate, copper nitrate etc.

Table 3 : Reactivity series of metals

Potassium	Most reactive
Sodium	
Magnesium	
Aluminum	
Zinc	
Iron	
Lead	
Tin	
Copper	
Silver	
Gold	
Platinum	Least reactive

- (f) **Noble metals and Uses:** The metals that are fairly unreactive are called as Noble metals. For example Silver, Gold and Platinum.

Uses of Silver:

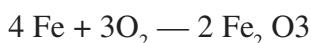
- (i) For electroplating
- (ii) For ornaments
- (iii) For making photographic chemical and some medicines
- (iv) For coins and medals
- (v) For delicate Jewellery and expensive Table ware.
- (vi) Being good conductor but very costly, it is used in specialized electrical equipments for making contacts.

Uses of Gold: It is a yellow metal and does not tarnish, so it is used for jewellery purposes. It is a very rare and valuable metal since ancient times and used as standard for currency. Special coins and medals are made from gold. It can be beaten to very thin sheets. Gold is used in dentistry.

Uses of Platinum: It is also a rare & silvery white metal. It is hard and resistant to heat. As alloy with silver, it is used for expensive electrical components. It is used for jewellery purposes and surgical instruments and chemical equipments. Platinum is used as catalyst in many chemical reactions.

- (g) **Corrosion:** It is a chemical process by which metals are damaged and become of no use. Metals usually lose their characteristic properties. A very common example is RUSTING of iron.

The iron combines with oxygen in presence of moisture and gets converted to iron oxide, which has no physical property or strength of iron.



Iron oxygen Iron oxide

By taking preventive measures like; painting, application of oil etc., the metallic iron part can be prevented to come in contact with moisture and air and rusting is avoided. Zinc and Tin coating also avoid rusting of iron and steel. Coating of iron with Zn is called galvanization. The corrosive reaction takes place with Zn coating and iron is protected. Galvanized steel sheets are used in car body panels, grids and buckets etc.

Copper also corrodes in moist air and CO_2 to form greenish layer of copper carbonate. The Aluminium on corrosion forms a layer of aluminium oxide which is rather inert and does not allow further corrosion.

CHAPTER 5: COMBUSTION, FLAME AND FUELS

Formative Assessment

1. **Oral Questions:**

- (a) Natural gas burns completely to give carbondioxide and water, because natural gas contains only hydrocarbons in gaseous state.
- (b) Paper, wood and kerosene are combustible substances.
- (c) Water gas is a mixture of carbon-monoxide and hydrogen. It is a very good fuel as both these are combustible.

2. **Tick (3) the Correct answer:**

- (a) (iii) Carbondioxide, (b) (iv) Mercaptan, (c) (iv) LPG
- (d) (ii) Hydrogen, (e) (ii) Outermost.

3. **Name these:**

- | | |
|---|--------------------|
| (a) Gas obtained by decomposition of biomass | Biogas (Gobar Gas) |
| (b) Materials which burn readily | Combustible |
| (c) Type of energy generated by burning fuel | Heat Energy |
| (d) The amount of heat produced by burning 1 gm of fuel completely. | Calorific Value |

Summative Assessment

1. **Fill in the blanks:**

- (a) Hydrogen has the Highest calorific value.
- (b) The hottest part of a candle flame is outermost blue zone.
- (c) Wood is a solid but poor quality fuel.
- (d) The main constituent of biogas is Methane.
- (e) The process of obtaining crude oil from its source is called Mining.

2. **Write (T) for true and (F) for false**

- (a) T, (b) T, (c) F, (d) T, (e) T, (f) T.

4. **Answer the following questions:**

- (a) **Combustion:** The process of burning of a substance in presence of air or oxygen with liberation of heat and light is called combustion. It is an oxidation process which can occur even in absence of oxygen. For example sodium metal burns in atmosphere of chlorine.

Types of Combustion: Depending upon the rate of burning, combustion is divided into four types:

(i) Rapid combustion, in which large amount of heat and light is produced in short span of time, it usually occurs as fire. Burning of matchstic or petrol or magnesium ribbon are examples of Rapid Combustion.

(ii) **Slow Combustion:** It takes place slowly and at a low temperatures. Rusting of iron and tarnishing of bright copper surface are examples of slow combustion, Heat is slowly evolved at a steady rate. Respiration also is process of slow combustion.

(iii) **Spontaneous Combustion:** A few substances do not require any external heating for combustion. Sodium and phosphorus undergo slow oxidation by air and heat evolved is sufficient to attain ignition temperature and the substance burns spontaneously.

(iv) **Incomplete Combustion:** It occurs in inadequate amount of air or oxygen. Due to incomplete combustion of hydrocarbon fuels, carbon monoxide, soot, water, heat and light are produced.

- (b) **Flame:** The flame is a region where combustion of fuel takes place. Its colour depends upon the temperature, amount of air supply and the fuel itself. The flame can be either Luminous and Non-Luminous.

A candle flame has three different zones:

(i) The innermost black zone where no combustion occurs, (ii) The middle zone where burning starts and is usually yellowish indicating carbon particles and (iii) The outermost blue zone having highest temperature. The fuel burns completely and temperature is about 1800°C.



Zones of a Flame

- (c) **Different zones of candle flame and burning:** A burning candle has three different zones which are shown in given figure and the description of each zone is given below:

(i) **The Innermost Zone:** No combustion in this zone due to lack of oxygen. It appears black and is coolest zone of the candle flame, containing unburnt wax vapours.

(ii) **The middle Zone:** The middle zone is luminous because wax vapours start burning and emit yellowish light due to presence of carbon particles formed alongwith carbon-monoxide gas. Because of insufficient oxygen, the flame is not so hot. This middle zone is the largest zone of flame, but gives soot and smoke.

(iii) **The Outermost Zone:** This is the hottest but non-luminous zone of flame and have blue flame. The fuel burns completely and temperature is highest (about 1800°C). Water and carbon-dioxide are the combustion products.

- (d) **Coal- Formation, occurrence and types:**

(i) **Formation-** Coal is fossil fuel which was formed from prehistoric plants and animals millions of years ago. These were buried under layers of mud, rock and sand for millions of years and decomposed into organic matter and formed as fossil fuel alongwith petroleum, due to high temperature and pressure in absence of air.

(ii) **Occurrence:** Russia, China, USA, UK, Germany, Australia and Africa have rich deposits of coal. In India it is available mainly in Jharkhand and West Bengal.

(iii) **Types:** According to carbon content, the coal is classified into four categories- (i) Anthracite (90-95%), (ii), Bituminous (80-82%), (iii) Lignite (70%) and (iv) peat (about 60%).

(e) **Petroleum- Occurrence and mining**

(i) **Occurrence-** Petroleum also is a fossil fuel which is found under Earth's crust along with Natural gas above petroleum liquid trapped under two impervious rocks.

(ii) **Mining:** The crude petroleum is obtained by drilling a hole into Earth's crust and sinking pipes into it. The natural gas comes out at first with large pressure. When pressure subsides, crude oil is pumped out of oil well.

(f) **Gaseous Fuels:** Fuels that are in gaseous state at room temperature are known as gaseous fuels. Petroleum gas, natural gas, biogas, hydrogen, methane, water gas etc. are some of the gaseous fuel. Description of some common gaseous fuels is given below:

(i) **Hydrogen:** It has the highest calorific value, but its storage handling and transport is rather difficult. It is used as a fuel only for very specific purpose, e.g, as rocket fuel.

(ii) **Methane & LPG:** These fairly high calorific value and burn with smokeless fire and good for domestic purposes. LPG is supplied in gas cylinders containing 14.2 kg. Mercaptans are added in LPG to identify leakage.

(iii) **Biogas:** It is obtained by bacterial action on cattle dung and agricultural waste in absence of oxygen. Methane is main constituent of biogas. It is a clean fuel and have no storage or transport problem.

(iv) **Producer Gas:** It is prepared by passing air over red-hot coke and contains mainly nitrogen and carbon-monoxide. Because of nitrogen it has low calorific value.

(v) **Water Gas:** It is prepared by passing steam over red- hot coke. It contains carbon-monoxide and hydrogen and both are combustible, It is also a good clean fuel.

(vi) **Coal Gas:** It is obtained by destructive distillation of coal and it contains hydrogen, carbon-monoxide and methane and is also good clean fuel.

Formative Assessment - I (CCE Pattern)

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1. **Oral Questions:**

- (a) See Answer to Oral Question (1b) Chapter 1.
- (b) See Answer to Oral Question (1a) Chapter 3.
- (c) See Answer to Oral Question (1b) Chapter 4.

- (d) See Answer to Oral Question (1c) Chapter 5.
 - (e) See Answer to Oral Question (1d) Chapter 5.
2. **Tick (3) the Correct answer:**
- (a) See Answer to Q. No. 2 (a) Chapter 1.
 - (b) See Answer to Q. No. 2 (d) Chapter 2.
 - (c) See Answer to Q. No. 2 (b) Chapter 3.
 - (d) See Answer to Q. No. 2 (a) Chapter 4.
 - (e) See Answer to Q. No. 2 (d) Chapter 4.
3. **Name these:**
- (a) See Answer to Q. No. 3 (c) Chapter 3.
 - (b) See Answer to Q. No. 3 (a) Chapter 5.
 - (c) See Answer to Q. No. 3 (c) Chapter 1.
 - (d) Threshing
 - (e) Anthracite
4. **Ring the odd one**
- (a) Protozoans, (b) Sulphur, (c) Co₂ (d) Mercury, (e) Biogas.

CHAPTER 6: CONSERVATION OF BIODIVERSITY

Formative Assessment

1. **Oral Questions :**
- (a) The movement of animals in large numbers from one place to another to overcome unfavourable environmental conditions is called Migration. Migration is generally for certain period of time for reasons such as (i) breeding and reproduction or (ii) change of weather or say unfavourable conditions. The birds do migrate in large number due to change of seasons.
 - (b) **Conservation of Wild Life:** The conservation of wild life is directly related to protection and maintenance of forests, so that wild life animals have their natural habitat to live and perpetuate. Following steps can be taken for this purpose:
 - (i) Hunting and poaching of animals should be strictly prohibited.
 - (ii) Natural habitat of forests provide favourable environment to animals, so forest should be maintained.
 - (iii) Sale and export of animal and animal parts and products must be stopped.
 - (iv) Endangered species should be well protected and propagated
 - (v) National parks and sanctuaries must be established.
 - (c) Overgrazing causes severe damage to green cover of earth which leads to loss of fertility of soil and reduces water table below the surface of earth. This ultimately affect the overall ecological balance. Hence grazing should be in a planned manner, so that animals get their fodder as well without disturbing the green cover of earth.

- (d) **Endemic Species:** Species restricted to a particular geographic region are called Endemic species. For example; the South-west China is the only natural home for PANDA. Similarly, the western Ghat, Eastern Himalaya, Nicobar and Andaman regions are such where certain animals and plants survive and grow. All those species are endemic to that region.
2. **Tick (3) the Correct answer:**
 (a) (iv) 1984, (b) (i) Rajasthan (c) (iii) Tibetan antelope (Chiru)
 (d) (iii) Horn, (e) (i) Ranthambore
3. **Ring the odd one:**
 (a) Cheetal, (b) Red Date Book, (c) Jamun.

Summative Assessment

1. **Fill in the blanks:**
 (a) Overgrazing by animals has resulted in **destruction of forests**
 (b) The diverse plant species found in a natural place is called **Endemic**.
 (c) **Deforestation** results in depletion of wildlife.
 (d) The Kaziranga wildlife sanctuary preserves the **Indian Rhino**
 (e) The Project tiger was launched in **1973**.
2. **Write (T) for true and (F) for false**
 (a) F, (b) T, (c) T, (d) F, (e) F.
3. **Match the following:**
 (a) Reforestation (i) Planting new trees
 (b) Desertification (v) conversion of fertile land into desert
 (c) Biosphere Reserve (ii) Areas meant for conservation of biodiversity
 (d) Flora (iii) The plants found in particular area.
 (e) Fauna (iv) Animals found in particular area.
4. **Answer the following questions:**
 (a) **Biodiversity:** Different forms of life, i.e., plants, animals and micro-organisms present on earth, is known as 'Bio-diversity'. It is the genetic, species and ecological diversity as a whole in a given area.
 It is estimated that about 10 million different species of plants and animals exist on earth, even though we know only about 1.7 million out of which 0.5 million belong to plants and 1.2 millions species are animals.
 The plants and animals of the Biodiversity are sources of food, medicines, timber, milk, honey, spices, silk, essential oils and many more useful substances.
Threats to Biodiversity: The Major factor is ever increasing human needs for more and more food and shelter. Extinction is a natural process and evolutionary changes are inevitable and in natural course one species becomes extinct in a decade. But the human impact has accelerated the

extinction to an extent where millions of species are likely to be destroyed in few decades and the most serious threat is due to habitat destruction.

- (b) **Human activities and wildlife:** Most serious threat to Biodiversity is due to ever increasing needs for growing population and it has resulted in habitat destruction due to forest destruction for cities, industries, agriculture, mining and many other activities. The destruction of forest affect the wildlife directly, as the animals, insects and microorganisms become homeless.

Steps to Protect Wildlife: It includes protection, preservation and perpetuation of rare species of plants and animals in their natural habitat. Some of the steps to be taken are as follows:

- (i) Illegal hunting of animals and cutting of trees should be prohibited and therefore natural habitat must be conserved.
- (ii) Sale and export of animal parts and products should be banned. For example; the Tiger and panther skin, Rhino horns, bird's feathers and furs, shells of tortoise, skin of Indian Ghariyal, tusks of elephant etc. must be banned for sale or export.
- (iii) The special protection should be enforced for endangered species.
- (iv) A number of National Park and Sanctuaries should be established for rare species.
- (v) Reforestation is very-very essential for protecting wild life.
- (vi) Awareness among common people for wildlife conservation will be helpful to great extent.

- (c) **Biosphere Reserves:** The Biosphere Reserves are the protected areas wherein people are an important component of the system. In fact these are multipurpose protected areas developed to:

- (i) Conserve the representative samples of the ecosystem;
- (ii) Long term conservation of genetic diversity.
- (iii) promote appropriate and sustainable management of the relevant resources.

The Biosphere Reserve programme was launched by UNESCO in 1973 and in India it came into being as NILGIRI reserve in 1986. The important biosphere reserves in India are Nanda Devi Biosphere reserve, Uttarakhand Biosphere Reserve etc-etc.

Effects of Pollution: The pollution disturbs the biological systems which actually renew the natural resources like water, air, soil etc.

- (i) Water pollution affects plants and animals adversely.
- (ii) Air pollution causes depletion of ozone layer which protects life on earth from UV radiation of sun. The imbalance between O₂—CO₂ cycle disturbs the photosynthesis and causes global warming.
- (iii) Insecticides and chemicals pollute the soil which in turn affects the quality of food and causes the bird-population to decline.

- (d) **Endemic Species:** The species which are restricted to a particular geographic region are called ‘endemic Species’. Some of the plants and animals are confined to that particular area. For example; Giant Panda is found only in south west china and one horned Rhino in Assam and the Bengal tiger in Sunderbans. Similarly there are several species of plants and animals on earth which are Endemic to certain regions.
- (e) **Migration:** The movement of animals in large numbers from one place to another to overcome unfavourable conditions for certain period of time and then return to their endemic place.
It may be seasonal (change of weather) or for breeding and reproduction. The seasonal migration occurs in many insects, birds, marine mammals and herbivores.
The Siberian cranes are Endemic to Siberia. It travels large distance and come to India in large numbers to avoid extreme cold of Siberia and return to Siberia when weather becomes favourable there.

Chapter 7: The Cell

Formative Assessment

1. Oral Questions:

- (a) Tissue is a group of cells of the same size, shape and function. They perform a particular function.
(b) Organelles are the living and non-living parts of the cytoplasm. Protoplasm is the thick jelly-like material which makes up most of each cell.

2. Tick (3) the Correct answer:

- (a) (ii) Xylem, (b) (i) Chloroplast (c) (iv) Nerve cells (d) (iv) Tissue
(e) (i) Cell wall

3. Name These:

- (a) Immune system (b) Prokaryotic cells
(c) Eukaryotic cells (d) Chromosomes.

Summative Assessment

1. Write (T) for true and (F) for false:

- (a) T, (b) T, (c) F, (d) F, (e) T.

2. Match the following:

- | | |
|------------------------|------------------------------|
| (a) Robert Hooke | (iii) Discovery of cell |
| (b) Nerve cell | (i) Branched and thread like |
| (c) Smooth muscle cell | (v) Unstirred |
| (d) Amoeba | (ii) Pseudopodia |

3. Answer the following questions:

- (a) The cell is the basic structural unit of our body. Most living organisms are made up of a large number of cells and the cells perform all the life activities of an organism.

Characteristics of Cells– 1. Cell vary from organism to organism. Some cells are very small (microscopic), while others are large (macroscopic). The cell size of very small bacteria varies from 0.1 to 0.5 micron in diameter. The largest cell is that of the egg of an ostrich having a dimension of 135 mm x 170 mm.

The variation of different cells is mainly dependent upon the functions of the cell. The cells may be oval, rounded, triangular, tubular, cuboidal, spindle-shaped or elongated.

2. Cells must secure food for energy, remove waste, obtain oxygen and synthesise new living material. They must produce necessary chemicals, regulate water balance, react to change in the environment and reproduce other cells.

- (b) Cells were discovered by an English scientist, Robert Hooke in 1665, while examining a slice of cork under a microscope. Hooke observed that a slice of cork is made up of tiny honeycomb like compartments, one on top of the other. He called these compartments as cells. It was much later that other scientists discovered that all living things are made up of cells. Based on the presence or absence of a well-developed nuclear membrane, cells are of two types: eukaryotic cells and prokaryotic.

Eukaryotic Cells– Eukaryotic cells are those in which the nuclear membrane is well developed.

Prokaryotic Cells– Prokaryotic cells are those in which the nuclear membrane is absent. The entire nuclear material in a prokaryotic cell is termed nucleoid.

- (c) The difference between an animal cell and plant cell are as follows:

Plant Cell	Animal Cell
1. A rigid cell wall is present. 2. Chloroplasts are present. 3. Large vacuoles are present and occupy a large 4. Centrosomes are absent. 5. Lysosomes are absent.	1. Cell wall is absent. 2. Chloroplasts are absent. 3. Vacuoles are either absent or very small and few in number. 4. Centrosomes are present. 5. Lysosomes are present.

- (d) Growth in living organisms occurs as a result of increase in the number of cells in the body. The process by which cells reproduce, is called cell division. After attaining a certain size, the cell divides into two and keeps multiplying by cell divisions. During cell division the nucleus divides first and then the division of cytoplasm takes place. During nuclear division the nucleus enlarges and the nuclear membrane disappears. The nucleus then splits into two halves. These halves are called daughter nuclei. Then the cytoplasm moves towards the daughter nuclei. At the same

time the cell membrane begins to contract from the middle and finally the cell divides into two daughter cells.

- (e) The tissues found in plants are called plant tissues. In multicellular plants there are two types of tissues mainly, meristematic tissues and permanent tissue.

Meristematic Tissues: These tissues are located mainly at the tip of the root and stem.

Permanent tissues: These tissues develop from the meristematic tissues. The cells of these tissues are larger than that of the meristematic tissues.

These tissues are of two types:

1. Simple tissues: Simple tissues are composed of only one type of cells. These are further divided into: parenchyma, collenchyma and sclerenchyma.

2. Conducting tissues or complex tissues: These tissues transport water and food to different parts of the plant. There are two types of conducting tissues in plants: xylem and phloem.

CHAPTER 8: Reproduction and The Endocrine System

Formative Assessment

1. **Oral Questions**

- (a) The stage of puberty starts at 11-12 years and continues up to age of 17 years.
(b) The pituitary Gland located at the base of brain is called Master Gland.
(c) AIDS is caused by HIV (Human Immunodeficiency Virus)

2. **Tick (3) the Correct answer:**

- (a) (iv) 280 days, (b) (iii) Testosterone, (c) (ii) Embryo (d) (i) Uterus, (e) (iv) ovary.

3. **Ring the odd one:**

- (a) pituitary Gland, (b) Pathogenesis, (c) Juvenile, (d) insulin.

Summative Assessment

1. **Fill in the blanks:**

- (a) The male gamete is called a **Sperm**.
(b) The period of pregnancy is called **gestation**.
(c) **Umbilical cord** nourishes the embryo inside the womb.
(d) Human beings are reproduced by **sexual** reproduction.
(e) The **testes** is a male reproductive organ.

2. **Write (T) for true and (F) for false:**

- (a) T, (b) T, (c) T, (d) T, (e) T.

4. **Answer the following questions:**

- (a) **Reproduction and Types:** The process by which living beings produce