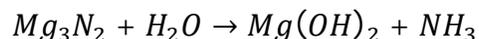

Q.1 Balance the following chemical equation: [1]



Ans. $Mg_3N_2 + 6H_2O \rightarrow 3Mg(OH)_2 + 2NH_3$

Q.2 What is the pH value of coffee? [1]

Ans. 4.5 – 5.5.

Q.3 What is the melting point of methane? [1]

Ans. $-182^{\circ}C$.

Q.4 Give an example of a metal which is a poor conductor of heat. [1]

Ans. Lead, (Pb).

Q.5 Which element has the electronic configuration 2, 8, 5? [1]

Ans. Phosphorous, P(Z = 15).

Q.6 Write the full form of D.N.A. [1]

Ans. Deoxyribonucleic Acid

Q.7 Te brain is responsible for: [1]

(a) Thinking

(b) Regulating the hear beat

(c) Balancing the body

(d) All of the above

Ans. (d) All of the above

Q.8 What is the refractive index of Benzene? [1]

Ans. 1.50

Q.9 What is the symbol of Resistor used in electric circuit? [1]

Ans. 

Q.10 Name a mirror that can give an erect and enlarged image of an object. [1]

Ans. Concave Mirror.

Q.11 Which of the following is not an example of a bio-mass energy source? [1]

- (a) Wood
- (b) Gobar-gas
- (c) Nuclear Energy
- (d) Coal.

Ans. (c) Nuclear Energy

Q.12 Name a device that helps to maintain a potential difference across a conductor. [1]

Ans. Voltmeter.

Q.13 What is a fossil fuel? [1]

Ans. Fossil fuel are formed from the dead remains of plants and animals buried deep under the earth for millions of years.

Q.14 Define the term "Consumers".

Ans. Consumers are organisms which consume other organisms or their products as their food. All animals belong to this category.

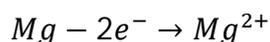
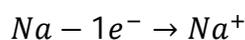
Q.15 When was Ganga Action Plan launched? [1]

Ans. 14 Jan, 1986.

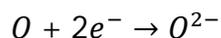
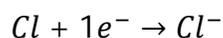
Q.16 What does one mean by Redox reactions? Give example. $\left[1\frac{1}{2}\right]$

Ans. **Redox reactions:** Reaction in which oxidation and, Reduction take place in the same container is called Redox reactions

Oxidation is a process in which an atom or ion loses one or more electron.



Reduction is the process in which an atom or ion gains one or more electrons for



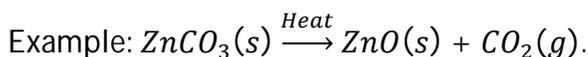
Q.17 Give two main uses of plaster of paris. $\left[1\frac{1}{2}\right]$

Ans. **Uses of plaster of paris:**

- (1) It is used in surgical bandages for setting broken bones of the body and in making casts in dentistry.
- (2) In making toys, casts for statues, decorative materials, jewellery, etc.
- (3) For making black board chalks.
- (4) In making fire proof materials.

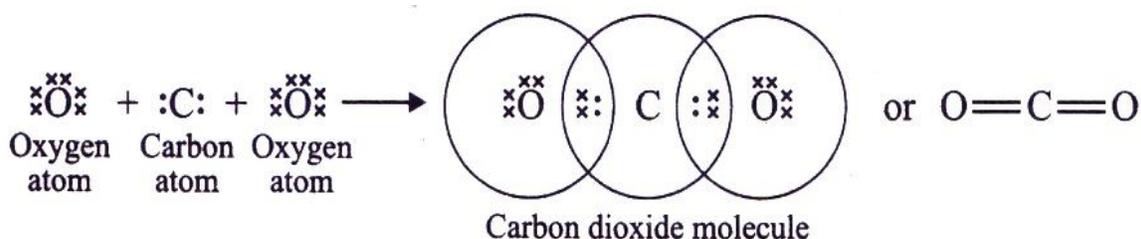
Q.18 What is meant by calcinations? Give example. [1 $\frac{1}{2}$]

Ans. **Calcinations** : The carbonate ores are changed into oxides by heating strongly in limited air. This process is known as calcinations.



Q.19 What would be the electron dot structure of carbon dioxide which has the formula CO_2 ? [1 $\frac{1}{2}$]

Ans. The electron dot structure of carbon dioxide is given below:



Each oxygen is bonded to the carbon atom by a double bond.

Q.20 Name two elements that have two electrons in their outermost shell. [1 $\frac{1}{2}$]

Ans. Magnesium and Calcium.

Q.21 What is the role of detergents in the Ecosystem? [1 $\frac{1}{2}$]

Ans. The detergents have polluting effect on ecosystem. The polluting effect of detergent after their use when, discharged into sewers, they end up in the environment through the streams and infiltration. They are used on a large scale, detergents are partly responsible:

For biomagnification.

- for eutrophication of rivers:

- for the contamination of groundwater by contributing nutrients (surfactants) and mineral salts such as phosphates, nitrates, ammonium, boron, etc.

Q.22 How is food transported in plants?

$\left[1\frac{1}{2}\right]$

Ans. Food is transported in plants through phloem.

(i) The transport in phloem is an active process and involves used of energy.

(ii) The energy in the form of ATP creates osmotic gradient which results in transportation of food through phloem.

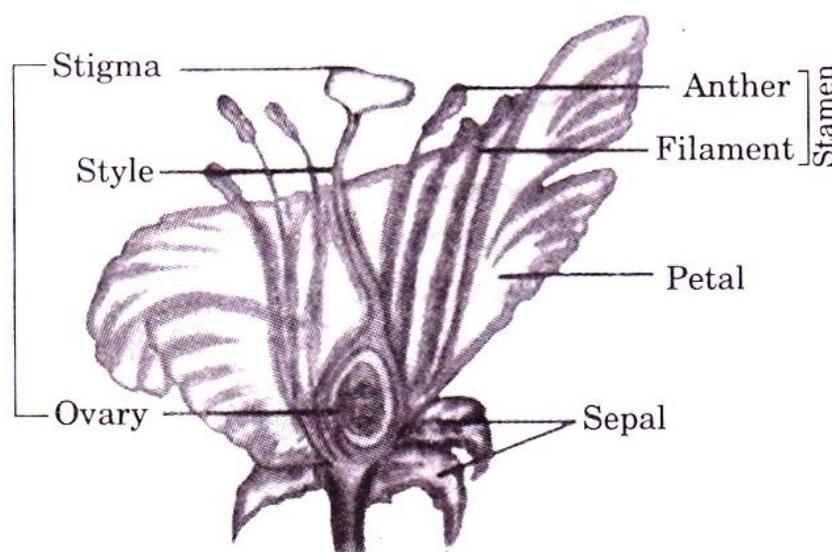
(iii) The transport of food from leaves to other parts is called translocation.

(iv) It has sieve tubes connected by sieve plates forming passage frpm root tips to stem tips.

Q.23 Draw a labelled diagram of the longitudinal section of a flower.

$\left[1\frac{1}{2}\right]$

Ans.



Structure of Flower

Q.24 Explain the importance of fossils in establishing evolutionary relationships. $\left[1\frac{1}{2}\right]$

Ans. Fossils are remains of plants and animals that existed thousands of years ago. Fossils of lower strata belong to early periods while those of upper strata are of later period. Arranging the fossils will indicate the occurrence off different forms of life at different times.

(i) Fossils indicate the path of evolution of different groups.

(ii) They can indicate the phylogent of some organisms.

(iii) Some fossils have characteristics intermediate between two groups. They tell how one group has evolved from another.

Q.25 What is Tyndall Effect? Give its three example.

$\left[1\frac{1}{2}\right]$

Ans. **Tyndall Effect:** The scattering of light by particles in its path is called Tyndall Effect.

Examples:

(i) When a beam of sunlight enters a dusty room through a window then its path becomes visible to us. It is because the tiny dust particles present in the air of room scatter the beam of light all around the room and hence the beam of light become visible to us.

(ii) The sky appears blue.

(iii) Sun appears red at sunrise & sunset.

Q.26 How much work is done in moving a charge of 2C across two points having a potential difference of 12V?

$\left[1\frac{1}{2}\right]$

Ans. $q = 2C ; V = 12V$

$$W = VQ$$

$$W = 2C \times 12V$$

$$= 24 \text{ Joule.}$$

Q.27 What is Geothermal Energy?

$\left[1\frac{1}{2}\right]$

Ans. **'Geo' means 'earth' and 'thermal' means 'heat'.** Thus, geothermal energy is the heat energy from hot rocks present inside the earth. This heat can be used as a source of energy to produce electricity. Geothermal energy is one of the few sources of energy that do not come directly or indirectly from solar energy.

Q.28 What is the function of an earth wire?

$\left[1\frac{1}{2}\right]$

Ans. **The function of an earth wire:** To avoid the risk of electric shocks, the metal body of an electrical appliance is "earthed". Earthing means to connect the metal case of electrical appliance to the earth (At zero potential) by means of a metal wire called "earth wire". In household circuits, we have three wires, the live wire, the neutral wire and the earth wire. One end of the earth wire is buried in the earth. We connect the earth wire to the metal case of the electrical appliance by using a three-pin plug. The metal casing of the appliance will now always remain at the zero potential of the earth. We say that appliance has been earthed or grounded.

Q.29 Why the ban on use of polythene bag is necessary?

$\left[1\frac{1}{2}\right]$

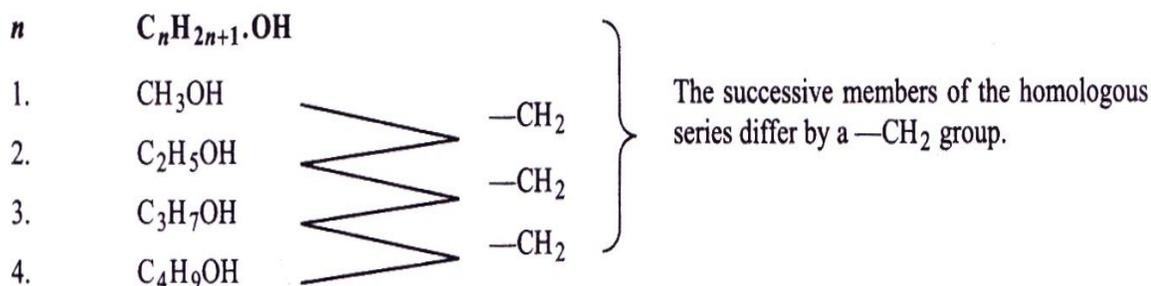
- Ans. (i) Plastic bags do not only pollute our water but also our land.
- (ii) The plastic bags are made from non-renewable sources and on this account, highly contribute to climate change.
- (iii) A lot of energy is used in producing these bags.
- (iv) Plastic bags are harmful to human health.
- (v) Plastic bags are expensive and hard to clean or remove from the environment.
- (vi) Even if we did decide to recycle plastic bags, these materials still do end up in oceans and landfills.
- (vii) Bans should be adopted because they are greatly effective at reducing plastic big waste.
- (viii) These plastic bags are impacting the environment negatively in that they are making the Great Pacific garbage patch bigger every minute.
- (ix) People are ready for the ban and thus, it should be adopted.
- (x) Through banning plastic bags, the people will learn to support local workers together with green industries.

Q.30 Explain Rancidity with one example. [2]

Ans. **Rancidity:** The oxidation of fatty food forming products which have bad taste and bad smell is called rancidity, e.g., in stale food. This can be slowed down by adding anti-oxidants or vacuum packing or flushing the food with nitrogen or by refrigeration.

Q.31 What is an homologour series? Explain with example. [2]

Ans. **Homologour series:** Homologour series may be defined as group of compounds having the same functional groups, similar chemical properties and the successive members differ by a $-CH_2$ group or 14 mass unit.



Q.32 State Fleming's left-hand rule. [2]

Ans. **According to this rule:** If we stretch forefinger, middle finger & thumb of our left hand mutually perpendicular to each other, such that forefinger gives the direction of magnetic field, middle finger gives direction of current, then direction of current is given by thumb.

Q.33 How do we detect the smell of an Agarbatti? [2]

Ans. The olfactory receptors of our nose pick the smell of an agarbatti. They send signals to the olfactory lobes located in the forebrain which interpret those signals and information.

Q.34 Differentiate between food chain and food web. [2]

Ans. **Differentiate between food chain and food web**

Sr. No	Food chains	Food web
1.	Food chain consists of a single series of food relations	Food web is a complex network of several series of food chains or food relations.
2.	It has maximum 4-6 trophic levels of different species.	It has a number of trophic levels or populations of different species.
3.	Each organism uses a particular food.	Each organism can use different types of food.
4.	Starvation is observed whenever the members of lower trophic level decrease in number.	Food webs do not show starvation and help in increasing the population of endangered species.

Q.35 What is the role of the seminal vesicles and the prostate gland? [2]

Ans. Seminal vesicle is the place where the semens are stored temporarily. They add fluid content to the semen. Prostate gland makes the medium of semen alkaline. It produces the prostatic fluid which is discharged into urethra through fine ducts.

Q.36 How can Ethanol and Ethanoic Acid be differentiated on the basis of their physical and chemical properties? [4]

Ans. **Differentiated on the basis of their physical property**

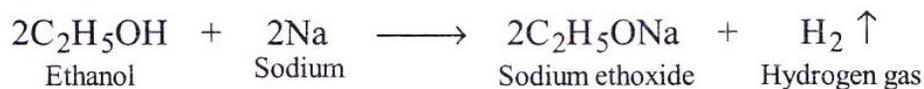
Sr. No	Ethanol	Ethanoic acid
1.	It is liquid at room temperature and has a pleasant fruity smell.	It is liquid at room temperature and has vinegar like smell.
2.	It does not freeze in winter.	It freezes in winter at 17°C.

3.	It evaporates at room temperature.	It does not evaporate at room temperature.
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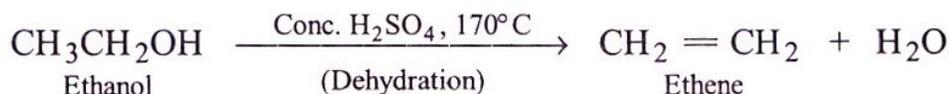
Differentiated on the basis of their chemical property

Chemical properties of ethanol

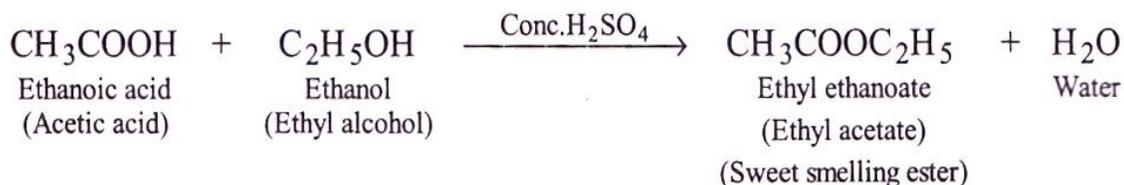
(1) Reaction with sodium: Ethanol reacts with sodium to form sodium ethoxide and hydrogen gas.



(2) Dehydration: When ethanol is heated with excess of concentrated sulphuric acid at 170°C (443 K), it gets dehydrated to form ethene. In this reaction concentrated sulphuric acid acts as a dehydrating agent (which removes water molecule from ethanol molecule).



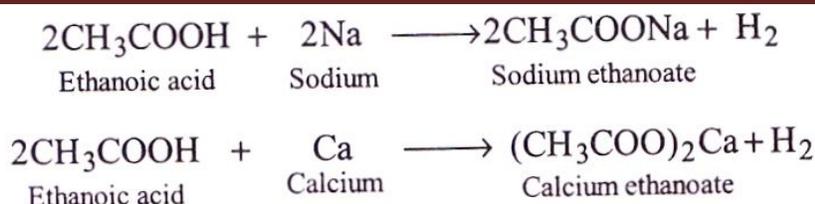
(3) Reaction with Ethanoic Acid (Formation of Ester): Ethanol reacts with ethanoic acid on warming with a few drops of concentrated sulphuric acid to form a sweet smelling ester, ethyl ethanoate.



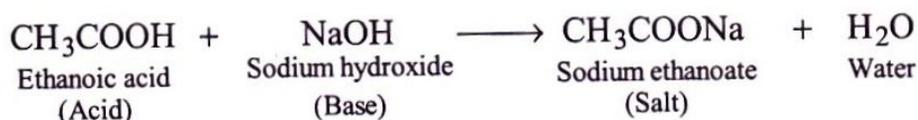
The reaction in which a carboxylic acid combines with an alcohol to form an ester is called esterification.

Chemical properties of ethanoic acid:

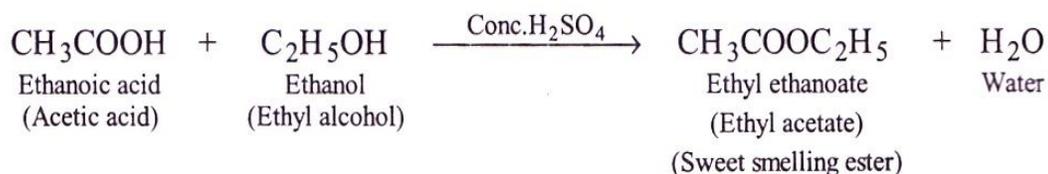
(1) Reaction with active metals: Active metals such as sodium, potassium, calcium, magnesium, aluminium, iron, zinc, etc., which lie above hydrogen in the activity series react with ethanoic acid evolving hydrogen gas. For example



(2) Reaction with alkalis or bases: Like mineral acids, ethanoic acid reacts with bases (or alkalis) to form salt and water. For example, ethanoic acid reacts with sodium hydroxide to form salt called sodium ethanoate and water.



(3) Reaction with Ethanoic Acid (Formation of Ester): Ethanol reacts with ethanoic acid on warming with a few drops of concentrated sulphuric acid to form a sweet smelling ester, ethyl ethanoate.



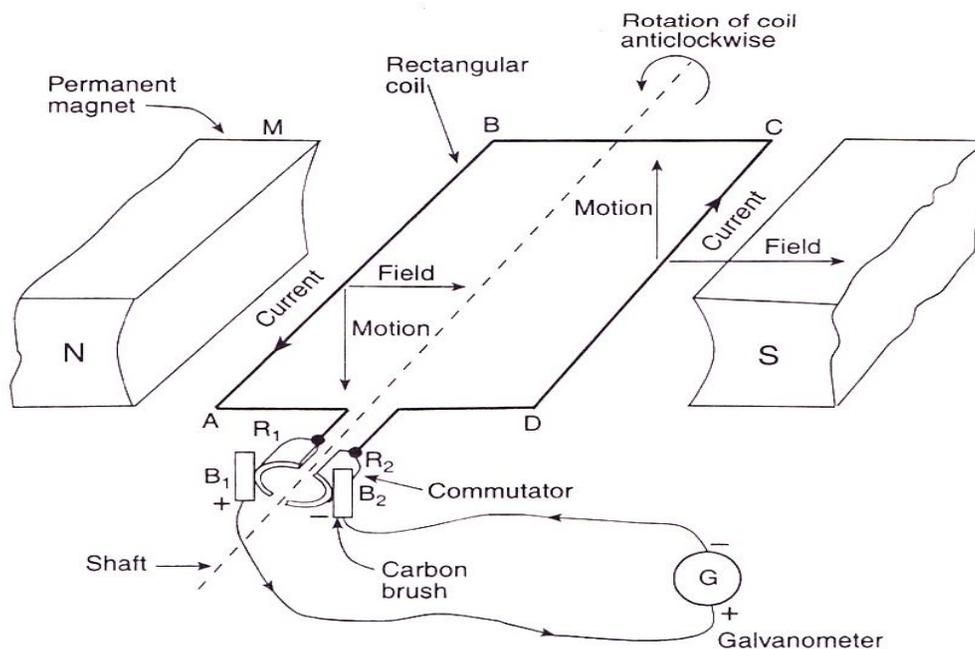
The reaction in which a carboxylic acid combines with an alcohol to form an ester is called esterification.

- Q.37 Draw a labelled diagram of an electric motor. Explain its principle and working. What is the importance of a split ring in an electric motor? [4]

Or

A concave lens has focal length of 15cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens? Also find the magnification produced by the lens. [4]

- Ans. **Principle of electric motor:** Electric motor works on the principle that when a rectangular coil is placed in a magnetic field and current is passed through it, a force acts on the coil which rotates it continuously. When the coil rotates, the shaft attached to it also rotates. In this way the electrical energy supplied to the motor is converted into the mechanical energy of rotation.



Electric motor

Working of electric motor : In an electric motor, a rectangular coil is suspended between the two poles of a magnetic field. The electric supply to the coil is connected with a commutator, which reverses the direction of flow of electric through the circuit.

When electric current is supplied to the coil of electric motor, it gets deflected because of magnetic field. As it reaches the half way, the split ring reverses the direction of flow of electric current. Reversal of direction of current reverses the direction of forces acting on the coil. The change in direction of force pushes the coil and it moves another half turn. Thus, the coil completes one rotation around the axle. Continuation of this process keeps the motor in rotation.

In commercial motor, an electromagnet is used in place of a permanent magnet and an armature is used.

Importance of split rings: It reverses the direction of flow of electric current.

Or

Given that $f = -15\text{cm}$; $v = -10\text{cm}$; $u = ?$, $m = ?$

According to lens formula:

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \text{ or } \frac{1}{u} = \frac{1}{v} - \frac{1}{f}$$

$$\frac{1}{u} = \frac{1}{-10} - \left(\frac{1}{-15} \right) = \frac{-1}{10} + \frac{1}{15} = \frac{-3+2}{30} = \frac{-1}{30}$$

$$u = -30\text{cm}$$

Also $m = \frac{v}{u}$

$$\frac{-10}{-30} = \frac{1}{3} = 0.33$$

Hence, a virtual & erect image is formed.

Q.38 What are the differences between aerobic respiration and anaerobic respiration? [4]

Ans. **Differences between aerobic respiration and anaerobic respiration**

Sr. No	Aerobic Respiration	Anaerobic Respiration
1.	It occurs in the presence of oxygen.	It occurs in the absence of oxygen.
2.	CO_2 and H_2O are the end products.	C_2H_5OH or lactic acid is the end product.
3.	Energy output is high.	Energy output is low.
4.	The complete oxidation of carbohydrates occurs.	The incomplete oxidation of carbohydrates occurs.