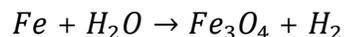

Q.1 Balance the following chemical equation: [1]



Ans. $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$

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

Ans. 4.3.

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

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

Q.4 Which metal does not corrode easily? [1]

Ans. Gold and Aluminium

Q.5 Which element has the electronic configuration 2, 8, 3? [1]

Ans. Aluminium

Q.6 Write the full form of A.T.P. [1]

Ans. **A.T.P:** Adenosine Triphosphate.

Q.7 The Anther contains: [1]

Ans. **Anther contains:** Pollen Grains.

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

Ans. 1.33 or $\frac{4}{3}$.

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

Ans. 

Q.10 The Frequency of Alternating current is Hz. [1]

Ans. 50 Hz.

Q.11 Which country is called the "Country of Winds"? [1]

Ans. Denmark.

Q.12 Which of the following constitute a food-chain? [1]

(a) Grass, Wheat and Mango

(b) Grass, Goat and Human

(c) Goat, Cow and Elphant

(d) Grass, Fish and Goat

Ans. (b) Grass, Goat and Human

Q.13 What is the meaning of second R in 3 Rs? [1]

Ans. Reuse.

Q.14 What is Mirror Formula? [1]

Ans. $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$.

Q.15 What is the approximate value of solar-constant? [1]

Ans. 1.4 kwatt m^{-2} .

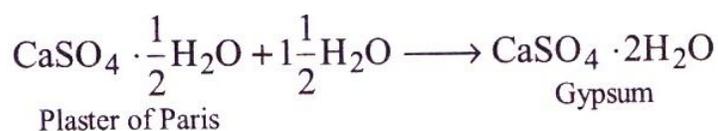
Q.16 What do you mean by combination reaction? Give example. $[1 \frac{1}{2}]$

Ans. **Combination reaction:** The reaction in which two or more substances combine to form a single substance, is called combination reactions. In combination reaction two or more elements can combine to form a new compound or an element and a compound can combine to form a new compound.

Example: $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$

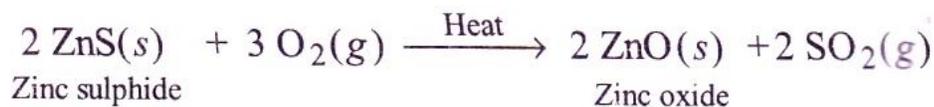
Q.17 Write an equation to show the reaction between plaster of Paris and water. $[1 \frac{1}{2}]$

Ans. **Reaction between plaster of Paris and water:**



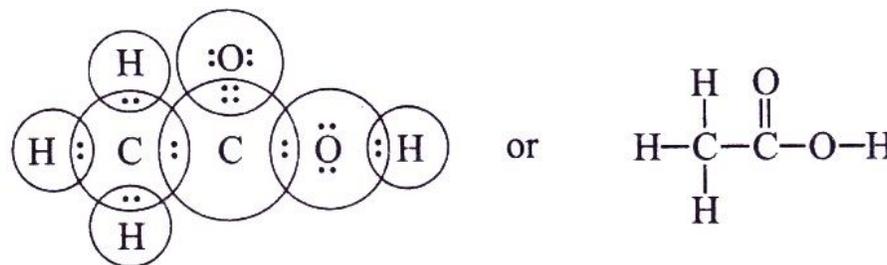
Q.18 What do you mean by Roasting? Give example. $[1 \frac{1}{2}]$

Ans. **Roasting:** Roasting is the process which is carried out in the presence of excess of air. As a result of roasting, the sulphide ore is converted into the oxide form.



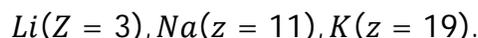
Q.19 Draw the electron dot structure for ethanoic acid. $[1 \frac{1}{2}]$

Ans. Electron dot structure of ethanoic acid (CH_3COOH) is:



Q.20 Name three elements that have a single electron in their outermost shell. [1 $\frac{1}{2}$]

Ans. **Three elements that have a single electron in their outermost shell:**



Q.21 What are the problems caused by the non-biodegradable wastes that we generate? [1 $\frac{1}{2}$]

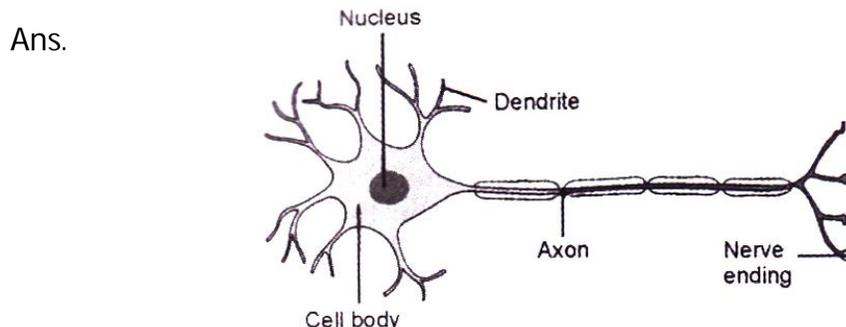
- Ans. (1) These can not be recycled naturally and their products cause environmental pollution.
- (2) These can not decomposed into simple non poisonous compounds by the action of microorganisms in nature.
- (3) The non-biodegradable substances like DDT can enter food chain and cause biomagnification.

Q.22 What are the components of the transport system in highly organised plant? [1 $\frac{1}{2}$]

Ans. The plant transport system in highly organized plants contains following:

- (i) Xylem:** To transport water and minerals from roots to other parts. It consists of tracheid, vessels, xylem, parenchyma and xylem fibres.
- (ii) Phloem:** To transport food from leaves to other parts. It consists of sieve tubes, companion cells, phloem fibres and phloem parenchyma.

Q.23 Draw the diagram of a Neuron? [1 $\frac{1}{2}$]



Q.24 How is the sex of the child determined in human beings? [1 $\frac{1}{2}$]

Ans. (i) In human beings, sex of the child is determined depending upon the kind of male gamete fused with the female gamete (egg or ovum). If male gamete carrying 'X' chromosome fertilizes the ovum carrying 'X' chromosome, the sex of the child will be female.

(ii) If male gamete carrying Y chromosome fertilizes the egg carrying 'X' chromosome, the sex of the child will be male.

Q.25 Define power of a lens. What is its unit? [1 $\frac{1}{2}$]

Ans. Power of lens is ability to converge or diverge the light rays incident on it.

Or

It is the reciprocal of focal length.

$$P = \frac{1}{f}$$

Unit of power is "Dioptre".

Q.26 A current of 0.5A is drawn by a filament of an electric bulb for 10 minutes, find the amount of electric charge that flows through the circuit. [1 $\frac{1}{2}$]

Ans. Current (I) = 0.5 A, Time (t) = 10 minute = (10 × 60 sec) = 600sec.

Charge (q) = ?

We know that [q = I × t]

$$q = 0.5 \times 600 = 300C.$$

$q = 300C$

Q.27 What are the significance of Nuclear Energy? [1 $\frac{1}{2}$]

Ans. (i) It produces a large amount of useful energy from a very small amount of a nuclear fuel.

(ii) It does not produce gases like carbon dioxide which contribute to greenhouse effect or sulphur dioxide which causes acid rain.

Q.28 List two methods of producing magnetic field. [1 $\frac{1}{2}$]

Ans. **Methods of producing magnetic field:**

- (i) a straight conductor (or straight wire) carrying current.
- (ii) a circular loop (or circular wire) carrying current, and
- (iii) a solenoid (long coil of wire) carrying current.

Q.29 What a note on "Chipko Andolan". [1 $\frac{1}{2}$]

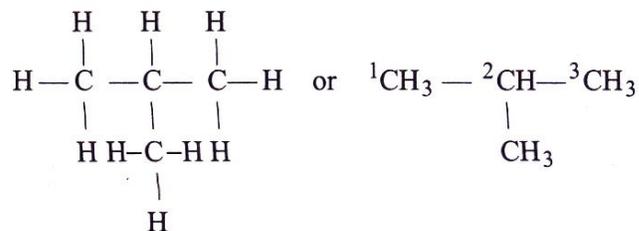
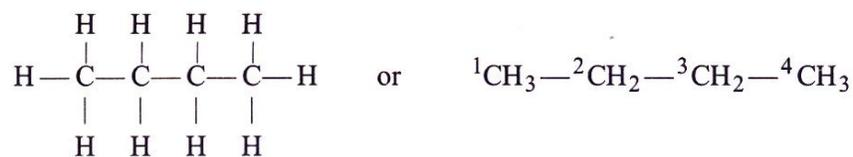
Ans. Chipko Andolan was movement which was originated in Garhwal in early 1970's. A logging contractor had been allowed to cut down trees in a forest close to a village. The people of the village did not want this forest to be cut down because it would have spoiled their healthy environment. The contractor's workers came in the forest to cut down the trees. The women of the village reached the forest quickly and clasped the tree trunks with their arms, preventing the workers from cutting down the trees. The forest trees were thus saved. The Chipko Movement quickly spread across all the communities and helped in the conservation of forests.

Q.30 Oil and fat containing food items are flushed with Nitrogen, why? [2]

Ans. In the presence of oxygen of the air, the fats present in the fatty food are oxidized to compound which have a bad smell, i.e., the food becomes rancid. Flushing with nitrogen cuts oxygen and protects the food from rancidity.

Q.31 Draw the structural Isomers for Butane. [2]

Ans. **Structural Isomers for Butane:**



Q.32 State Fleming's Right-hand Rule. [2]

Ans. **According to this Rule:** If we stretch the thumb, the forefinger and the centre finger of our right-hand at right angles to one another, in such a way that forefinger points in the direction of magnetic field, and thumb points in the direction of motion

of conductor, then the direction in which centre finger points gives the direction of induced current in the conductor.

Q.33 What are the differences between Reflection and Refraction? [2]

Ans. **Differences between Reflection and Refraction**

Sr. No	Reflection	Refraction
1.	The phenomenon of sending back the light rays which fall on the surface of an object, is called reflection of light.	The change in direction of light when it passes from one medium to another obliquely, is called refraction of light.
2.	Angle of incidence = Angle of reflection, i.e. ($i = r$)	Angle of incidence \neq Angle of refraction, i.e. ($i \neq r$)
3.	Velocity of light remains same.	Velocity of light does not remains same.

Q.34 What contribution you can make in reducing the problem of waste disposal? Give any methods. [2]

Ans. The problem of waste disposal can be reduced in many ways. Two methods are given below:

(i) By using more of biodegradable substances and reducing the use of non-biodegradable substances. For example, instead of plastic bags, one should carry jute bags or cloth bags for shopping.

(ii) By proper degradation of biodegradable waste and non-biodegradable waste before disposing. We can dump biodegradable waste in a compost pit to convert it into manure or use it for producing biogas. We can recycle non-biodegradable waste wherever possible.

Q.35 Why reduction in number of surviving tigers is a cause of worry from the point of view of genetics? [2]

Ans. Sometimes a species (a type of animal or plant) may completely die out. It may extinct. Once a species is extinct, its genes are lost for ever. It cannot re-emerge at all. The small numbers of surviving tigers are a cause of worry from the point of view of genetics because if they all die out and become extinct, their genes will be lost for ever. Our coming generations will not be able to see tigers at all.

Q.36 Differentiate between soaps and synthetic detergents. [4]

Ans. **Differentiate between soaps and synthetic detergents**

Sr. No	Soaps	Synthetic
1.	Soaps are the sodium salts (or potassium salts) of the long chain	Synthetic are the sodium salts of long chain benzene sulphonic acids or long

	carboxylic acids (fatty acids). The ionic group in soaps is $-COO^-Na^+$.	chain alkyl hydrogen sulphates. The ionic group in a synthetic is $-SO_3^-Na^+$ or $-SO_4^-Na^+$
2.	Soaps are not suitable for washing purposes when the water is hard.	Synthetic can be used for washing even when the water is hard.
3.	Soaps are biodegradable.	Some of the synthetic are not biodegradable.
4.	Soaps have relatively weak cleansing action.	Synthetic have a strong cleaning action.

Q.37 With the help of labelled diagram explain the structure (construction) and working of the human eye.

Or

A convex mirror used for rear-view on an automobile has a radius of curvature of 3.00m. If a bus is located at 5.00m from this mirror find the position, nature and size of the image. [4]

Ans. **Structure (construction) and working of the human eye:**

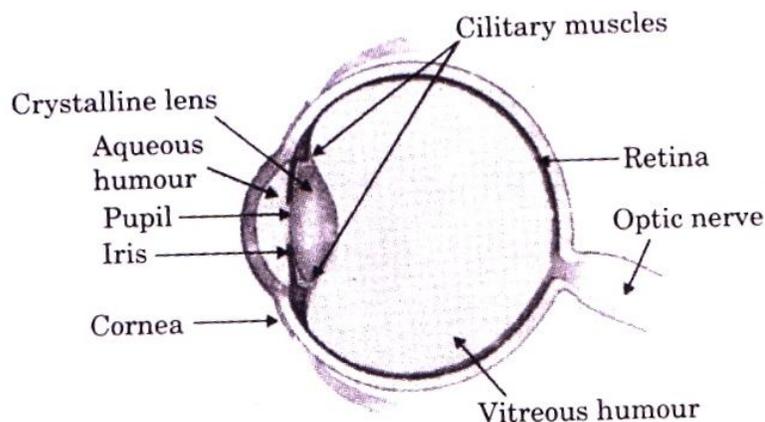
(i) Cornea: It refracts the light falling on it.

(ii) Iris: Iris controls the size of the pupil.

(iii) Pupil: It controls the amount of light entering the eye.

(iv) Crystalline lens: It is a convex lens which converges the light rays coming from the object to form an image on retina.

(v) Ciliary muscles: They hold the lens and changes its focal by compressing or stretching it.



(vi) Retina: It is a delicate membrane having light-sensitive cells which generate electrical impulses on which image is formed.

(vii) **Aqueous humour:** Provides power to the cornea.

(viii) **Vitreous humour:** The transparent jelly like tissue filling the eye ball behind the lens.

(ix) **Optic nerve:** It captures the light rays focused by the lens and sends impulses to the brain via optic nerve and transmits electrical signals to the brain.

Or

Radius of curvature (R) = $3m$; position of object(u) = $-5m$

Position of image (v) = ? ; Magnification (m) = ?

Focal length (f) = $\frac{R}{2} = \frac{3}{2} = 1.5m$

According to Mirror Formula

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

Or
$$\frac{1}{v} + \frac{1}{f} = \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{15} - \left(\frac{1}{-5}\right)$$

$$\frac{1}{v} = \frac{10}{15} + \frac{1}{5} = \frac{10+3}{15} = \frac{13}{15}$$

$$= v = \frac{15}{13}m$$

$$\text{Magnification (m)} = \frac{-v}{u} = \frac{-15}{\frac{13}{-5}} = \frac{+3}{13}m = +0.23m.$$

As $m < 1$, so image will be diminished, virtual, erect & behind the mirror.

Q.38 Define the following terms:

[4]

(i) Mineral

(ii) Ore

(iii) Gangue

Ans. **(i) Mineral:** The naturally occurring chemical substances in form of which the metals occur in the earth along with the impurities are called minerals.

(ii) Ore: The mineral form which the metal can be extracted conveniently and economically is called an ore.

(iii) Gangue: The earthy, sandy and rocky impurities associated with the mineral are called gangue.