Sample Paper - 3

GENERAL INSTRUCTIONS

Attempt all the questions and follow the instructions fives in each question.

Q. No. 1 is MCQs type, choose the correct option.

Q. No. 2 are Very Short Answer Type Questions, carry one mark each.

Q. No. 3 to Q. No. 9 are Short Answer Type Questions-I, carry 2 marks each.

Q. No. 10 to Q. No 19 are also Short Answer Type Questions-II, carry 3markseach.

Q. No. 20 to Q. No 23 are Long Answer Type Questions, carry 5 marks each

Multiple Choice Type Questions

[1 mark each]

1. Choose the correct option : **[1 x 10 =10]**

(i) The passage of an electric current through a conducting liquid causes :
(a) Heating effects of current
(b) Magnetic effects of current
(c) Chemical effects of current
(d) Electric effects of current

(ii) Angle of incidence is equal to the angle of reflection :
(a) always
(b) sometimes
(c) under special conditions
(d) never

(iii) An agricultural implement used since ancient times for tilling the soil, adding fertilisers, removing weeds etc. is :
(a) hoe
(b) combine
(c) plough
(d) seed drill

(iv) Carrier of malaria - causing protozoan is:
(a) Female anopheles mosquito
(b) Cockroach
(c) Housefly
(d) Butterfly

(v) This bacterium promotes the formation of milk into curd
(a) Rhizobium
(b) Lactobacillus
(c) Aedes
(d) All

(vi) Which is not made from nylon?
(a) Socks
(b) Rope
(c) Bottles
(d) Tents

(vii) Some metals react with bases to produce gas
(a) Oxygen
(b) Nitrogen
(c) Hydrogen
(d) Carbon dioxide

(Viii) Which is not an exhaustible natural resource?
(a) Sunlight
(b) Petroleum
(c) Natural gas
(d) Wildlife

(ix) Which of the following is not a combustible substance?
(a) Camphor
(b) Straw
(c) Glass
(d) Charcoal

(x) In our country, large patches of forests are being cleared for cultivation of crops. The environmental impact of such a practice will lead to:
(a) Soil erosion
(b) Soil pollution
(c) Soil conservation
(d) Soil fertility

Very Short Answer Type Questions

[1 mark each]

2. **(i)** How could a single cell becomes such a big individual? **[1]**

(ii) Name the male sex hormone. **[1]**

(iii) Give two examples of situation in which applied force causes a change in shape of an object. **[1]**

(iv) How many types of friction are there? **[1]**

(v) Which animal can hear sounds of frequencies higher than 20,000 Hz? **[1]**

(vi) What is electric current? **[1]**

Short Answer Type Questions-I

[2 mark each]

3. A stretched string on being set into vibrations produces the audible sound. Explain how? **[2]**

4. An electric current is passed through a conducting solution. List any three possible observations. **[2]**

5. Lightning and thunder takes place simultaneously in sky and at the same distance from us. Lightning is seen earlier and thunder is heard later. Why? **[2]**

6. Name the factors that affect friction. **[2]**

7. Why are little plants kept in small bags in a nursery? **[2]**

8. How can a farmer increase the fertility of the soil? **[2]**

Short Answer Type Questions-II

[3 mark each]

9. How food becomes poisonous? **[2]**

10. Should antibiotics be used in cold and flu? Give reasons for your answer. **[3]**

11. PVC (Polyvinyl Chloride) is a thermoplastic and is used for making toys, chappals etc. Bakelite is thermosetting plastic and is used for making electrical switches, handles of various utensils etc. Can you write the major difference between these two types of plastics? **[3]**

12. Immersion rods are made up of metallic substances. Why? **[3]**

13. Give reason :
Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipe does not. **[3]**

14. What is poaching? How does poaching affect environment and humans? **[1+2]**

15. The size of the cells of an organism has no relation with the size of its body. Do you agree? Give reasons **[3]**

16. **(a)** All the metals are malleable and ductile except few. Which are those metals (neither malleable nor ductile).
[1 ½+1 ½]

(b) Metals are used for making electric wires. Name at least one metal and why these metals are used in making electric wires.

17. Give reason : **[3]**
Treaded tyres are used in cars, trucks and bulldozers

18. How vaccine works? **[3]**

19. Explain the process of formation of petroleum.
[3]

Long Answer Type Questions

[5 mark each]

20. Write a short note on : **[5]**
(i) Useful micro-organisms.

(ii) Harmful micro-organisms.

21. Explain the difference between the thermoplastics and thermosetting plastics. **[5]**

22. Discuss all the chemical properties of (a) Metals and (b) Non-metals. **[5]**

23. Make a sketch of the human nerve cell. What functions do nerve cells do? **[5]**

Solutions

Multiple Choice Type Questions

[1 mark each]

1.

(i) (c) Chemical effects of current **[1]**

(ii) (a) always **[1]**

(iii) (c) Plough **[1]**

(iv) (a) Female anopheles mosquito **[1]**

(v) (b) *Lactobacillus* **[1]**

(vi) (c) Bottles **[1]**

(vii) (c) Hydrogen **[1]**

(viii) (a) Sunlight **[1]**

(ix) (c) Glass **[1]**

(x) (a) Soil erosion **[1]**

Very Short Answer Type Questions

[1 mark each]

2. **(i)** Fertilisation results in the formation of zygote, which begins to develop into an embryo. **[1]**

(ii) The male sex hormone is testosterone. **[1]**

(iii) (a) We press a balloon to change its shape.

[½ + ½]

(b) We make chapati from a ball of dough.

(iv) There are four types of friction:
(a) Static friction

(b) Sliding friction

(c) Rolling friction

(d) Fluid friction **[1]**

(v) Dogs, Cats **[1]**

(vi) The flow of electric charge is called electric current. **[1]**

Short Answer Type Questions-I

[2 marks each]

3. A stretched string on being set into vibrations forces the surrounding air to vibrate and this vibrating air then affects our eardrum and produces an audible sound. **[2]**

4. Three possible observations are:
(a) The colour of the solution may change depending upon the electrodes.
(b) The temperature of the solution may increase.
(c) Bubbles near the electrodes can be seen.

(Any two) [1+1]

5. As speed of sound is very less than the speed of light (speed of sound 332 m/sec. and speed of light 3×10^8 $m/sec.$), so light moves much faster than sound. So, we first observe the lightening and later we observe the thunder although both are produced simultaneously.

[2]

6. Factors affecting friction :
(i) It depends on the nature of surfaces in contact.

(ii) It is more between rough surfaces and less between smooth surfaces.

(iii) It depends on how hard the two surfaces press together.

(iv) It is independent of the area of contact.

[½ × 4=2]

7. Seeds of a few plants such as paddy are first grown in nursery. When small plantlets are formed they are transplanted in the field manually. Some forest plants and flowering plants are also grown in the nursery. **[2]**

8. Farmers can increase the fertility of the soil by
(i) adding manure and fertilizers. **[½]**

(ii) crop rotation. **[½]**

(iii) leaving the field uncultivated in between two crops **[1]**

9. Food poisoning could be due to the consumption of food spoilt by some micro-organisms. Microorganisms that grow on our food sometimes produce toxic substances. These make the food poisonous causing serious illness and even death.

[2]

Short Answer Type Questions-II

[3 marks each]

10. No, antibiotics should not be used in cold and flu because these diseases are caused by viruses and antibiotics are not effective against viruses. **[3]**

11. Thermoplastics get deformed easily on heating and can be bent easily on heating. On the other hand, thermosetting plastics when moulded once cannot be softened on heating. **[2]**

The examples are as follows:
(i) Thermoplastics: Polythene and PVC **[½]**

(ii) Thermosetting plastics: Bakelite and Melamine. **[½]**

12. Metals are good conductors of heat and electricity. In immersion rods, electrical energy converts into heat energy. So immersion rods are made up of metallic substances. **[3]**

13. As paper has low ignition temperature, so it requires less amount of heat to catch fire, while for paper wrapped around the aluminium pipe, it must be heated upto ignition temperature of aluminium to ignite. So, it requires large amount of heat. **[3]**

14. When an animal is killed illegally, it is called poaching. It usually occurs when an animal possesses something that is considered valuable.

[1]

Effect of Poaching on environment: The whole ecosystem is affected due to harm caused on animal population. Everything from the animals to the plants and even the people in a specific place is negatively affected. We need various species of flora and fauna in our environmental ecosystem so that it is balanced and healthy. Our own survival depends on it. **[1]**
Effect of Poaching on humans: Two serious problems are faced by humans, first is spread of foodborne illnesses e.g., Ebola and anthrax and second major affect is depletion of natural resources.

[1]

15. The size of the cells of an organism is not related to the size of organism. This can be understood with the example of an elephant and a rat. The cells in elephant are not bigger in size as compared to the cells of small animal like rat. Hence, cells are not related to the size of organism.
However, the size of a cell is related to the function that a cell performs. The nerve cells in both rat and elephant are long and branched and perform the function of transferring and receiving messages and also help in co-ordination of different functions of body parts. **[3]**

16. (a) Zinc (Zn), Sodium (Na), Potassium (K) and Lead (Pb) are those metals which are non-malleable and non-ductile. **[1½]**

(b) Copper (Cu) is the metal used for making electrical wires because of good electrical conductivity. Metals are used in making electric wires as they are the good conductors of heat and electricity.

[1½]

17. Treaded tyres are used in cars, trucks and bulldozers so that there is proper grip for the vehicle with the ground. Tread displaces water beneath the tyre in wet conditions and doesn't let formation of thin film, reducing slippage of tyre and loss of control. **[3]**

18. By vaccination, disease carrying microbes enter our body, the body produces antibodies to fight the invader. The body also remembers how to fight the microbe if it enters again, So, if dead or weakened microbes are introduced in a healthy body, the body fights and kills them by producing suitable antibodies. The antibodies remain in the body and we are protected from the disease-causing microbes.
This is how a vaccine works. **[3]**

19. Petroleum is believed to be formed from organisms living in the sea. As these organisms die, their bodies settle at the bottom of the sea and gets covered with layers of sand and clay. Over millions of years, the dead organisms get transformed into petroleum, oil and natural gas and other fossil fuels under the conditions of the absence of air, high temperature and high pressure. Like coal, petroleum and natural gas are also fossil fuels. **[3]**

Since oil and gas are lighter than water and do not mix with it, they move upward. They are stopped by the overlying rocks which they cannot break through. **[3]**

Long Answer Type Questions

[5 marks each]

20. **(i) Useful micro-organisms :**

(a) Friendly micro-organisms: They are used for various purposes. They are used in making curd *(Lactobacillus bacteria)* and bread. They are ingredients of Idli, Dhoklas and Bhaturas.

(b) Commercial uses: Micro-organisms are used for the large scale production of alcohol and wine.
Yeast is grown on natural sugars present in grains such as barley, wheat, rice, fruit juices for this purpose.

(c) Medicinal uses: A very useful medicine group 'antibiotics' is prepared from micro-organisms.
Commonly-used antibiotics are formed by fungi and bacteria. Vaccines also protect us from microbes.

(d) Increasing soil fertility: Some bacteria and blue-green algae are able to fix nitrogen from atmosphere and form nitrogen compounds which increase the soil fertility.

(e) Decomposers: They decompose the dead organic substances into their constituents and clean the environment. **[3]**

(ii) Harmful micro-organisms:

(a) Pathogens: Disease causing micro-organisms are called pathogens.
Diseases such as dysentery and malaria are caused by protozoa. Typhoid and tuberculosis are bacterial diseases. Virus causes common ailments such as cold, influenza and coughs.

(b) Food spoilage: Some micro-organisms spoil food, clothing and leather. Fungus developed in moisture on leather and some food articles spoils them. **[2]**

21. Differences between thermoplastics and thermosetting plastics:

S. No.	Thermoplastic	Thermosetting plastics
(i)	These are the plastics which get deformed easily on heating. e.g., Polythene and PVC.	These are plastics, which when moulded once, cannot be softened by heating. e,g., Bakelite and melamine.
(ii)	These are used for making toys, combs, various types of con	In thermosetting plastics, bakelites are used for making electrical switches, handles of various utensils, etc. Melamines are used for making floor tiles, kitchen wares and fabrics which resist fire.
(iii)	These plastics can undergo recycling.	These plastics cannot undergo recycling.
(iv)	These plastics do not have cross- linking.	These plastics possess cross-linking.
(v)	These plastics do not possess strong intermolecular force of attraction.	These plastics possess strong inter-molecular force of attraction.

22. **(a) Chemical properties of metals :**

(i) Metals react with oxygen to produce oxides which are alkaline in nature. e.g.,

$$\underset{Magnesium}{2Mg} + \underset{Oxygen}{O_2} \rightarrow \underset{Magnesium\ Oxide}{2MgO}$$

(ii) Metallic oxides produce bases by reacting with water differently.

$$\underset{Sodium\ oxide}{Na_2O} + \underset{Weter}{H_2O} \rightarrow \underset{Sodium\ hydroxide}{2NaOH}$$

(iii) Metals react with acid to produce hydrogen gas.

$$\underset{Hydrochloric\ acid}{2HCI} + \underset{Sodium}{2Na} \rightarrow \underset{Sodium\ chloride}{2NaCI} + \underset{Hydrogen}{H_2}$$

(iv) More reactive metals displace the less reactive metals from their compounds in an aqueous solution.

$$\underset{Copper\ Sulpahte}{CuSo_4} + \underset{Zinc}{Zn} \rightarrow \underset{Zinc\ Sulphate}{ZnSO_4} + \underset{Copper}{Cu}$$

[2½]

(b) Chemical properties of Non-metals:

(i) Non-metals react with oxygen to produce oxides which are acidic in nature.

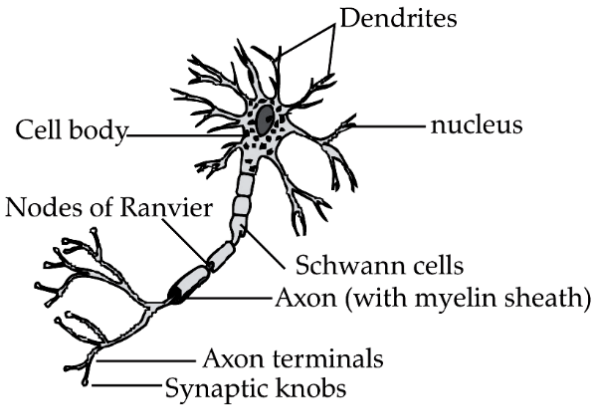
$$\underset{Sulphur}{S} + \underset{Oxygen}{O_2} \rightarrow \underset{Sulphur\ dioxide}{SO_2}$$

$$\underset{Sulphur\ dioxide}{SO_2} + \underset{Water}{H_2O} \rightarrow \underset{Sulphurous\ Acid}{H_2SO_3}$$

(ii) Non-metals do not react with water. **[2½]**

(iii) Non-metals do not show displacement reactions.

23.



Human nerve cell

[3]

Functions: The nerve cell receives and transfers messages, thereby helping to control and coordinate the working of different parts of the body. **[2]**