

Science (Outside Delhi)

1. What is the role of a catalyst in a chemical reaction? 1
2. Which class of compounds gives a positive Fehling's test? 1
3. Approximately how many stars are there in the Milky Way? 1
4. What is meant by the statement, "Potential difference between points A and B in an electric field is 1 volt."? 1
5. State the 'Law of Chemical Equilibrium'. Write an expression for the equilibrium constant (K) for the reaction, 2
$$\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) + 92\text{ kJ}$$
6. Name the organic acid present in vinegar. Write a chemical equation which represents the commercial method for the preparation of this acid from methanol.
7. Distinguish between 'artificial' and 'natural' satellites. Why artificial satellites are called "eyes in the sky"? 2
8. An electric lamp is marked 100 W, 220 V. It is used for 5 hours daily. Calculate
(i) Its resistance while glowing.
(ii) Energy consumed in kWh per day. 2
9. (a) Write the chemical name and formula of bleaching powder.
(b) Why does bleaching powder smell of chlorine when exposed to air?
(c) Write chemical equation to represent the action of dilute hydrochloric acid on bleaching powder. 3
10. What is meant by 'dehydrating agent'? Describe with a chemical equation, an activity to show that concentrated sulphuric acid is a strong dehydrating agent. 3
11. Give reasons for the following: 3
(i) Oxidation of ethanol with CrO_3 produces ethanal while ethanol when oxidised with alkaline KMnO_4 produces ethanoic acid.
(ii) Propanone forms addition product with HCN.
(iii) Alcohol supplied for industrial purposes is mixed with copper sulphate.
12. An object 50 cm tall is placed on the principal axis of a convex lens. Its 20 cm tall image is formed on the screen placed at a distance of 10 cm from the lens. Calculate the focal length of the lens. 3

- 13.** (a) State one limitation of solar energy available from solar cells.
(b) What is the minimum wind velocity required to obtain useful energy with a windmill?
(c) Define the term 'nuclear fission'. 3

- 14.** (a) State Ohm's Law.
(b) Draw a schematic diagram of the circuit for studying Ohm's Law. 3

- 15.** (a) Name the chief ore of iron. Write its formula.
(b) How is an iron ore concentrated? Describe it briefly.
(c) Draw a labeled diagram of the blast furnace used in the extraction of iron from its concentrated ore. 5

OR

- (a) Draw a labeled diagram of 'Frasch process' used for extracting Sulphur.
(b) State the principle involved in the extraction of Sulphur directly out of the ground.

16. A 14-year old student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him.

- (a) Name the defect of vision he is suffering from.
(b) With the help of labeled ray diagrams show how this defect can be corrected.
(c) Name the type of lens used to correct this defect. 5

OR

- (a) What is an electromagnet?
(b) List any of its two uses.
(c) Draw a labeled diagram to show how an electromagnet is made.
(d) What is the purpose of the soft iron core used in making an electromagnet?

SECTION - B

- 17.** Name the excretory unit of a kidney. 1
18. What are phytohormones? 1
19. Point out two differences between an artery and a vein. 2

OR

What is 'osmoregulation'? How does it take place in humans?

20. Explain 'reflex action' with a suitable example. 2

21. Explain double fertilization in plants. 3

22. (a) What is a gene?

(b) Where are genes located?

(c) What is the nature of gene? 3

OR

Define 'evolution'. Describe Darwin's theory of evolution.

23. What is 'soil erosion'? Mention its any two effects. Suggest two ways by which soil erosion can be checked. 3

24. (a) Draw a diagram of human 'alimentary canal'.

(b) Label the following on the diagram drawn:
Oesophagus, Liver, Gall bladder, Duodenum

(c) What is the function of liver in the human body? 5

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