

## Sample Question Paper

## SECTION- A

1. Why are the heating elements of electric toasters and electric irons made of an alloy rather than a pure metal ? 1

OR

What happens to the resistance of a conductor when its area of cross-section is increased ?

2. If you could use any source of energy for heating your food which one would you prefer ? State one reason for your choice. 1

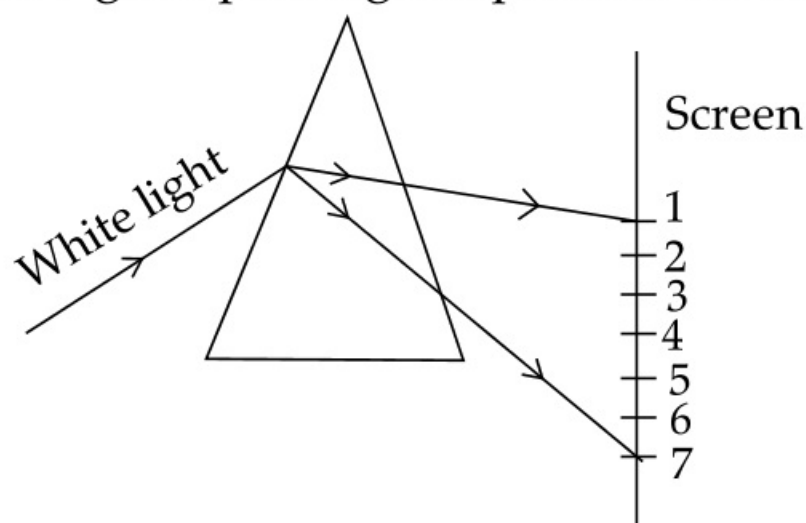
3. Read the passage below and answer the following questions.

Sanjana went to the market along with her mother to buy fruits. She saw the fruit dealer putting small quantity of some powder wrapped in a paper in each wooden pack containing unripe mangoes. On enquiry, the fruit dealer told him that the powder is specific chemical which will help the mangoes to ripe early. Sanjana was not convinced and he discussed the incidence with his class teacher the next day.

- (a) Name the chemical that fruit dealer had kept in wrapped paper in each box.  
 (b) Is this practice healthy?  
 (c) Name at least one other plant hormone which promotes the falling of leaves (abscission).  
 (d) The substance that triggers the fall of mature leaves and fruits from plants is due to  
 (i) auxin (ii) gibberellin  
 (iii) abscisic acid (iv) cytokinin

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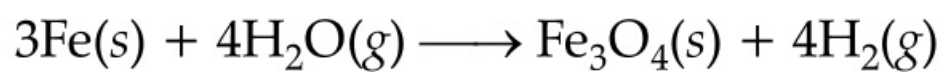
4. A beam of white light falling on a glass prism gets split into seven colours marked 1 to 7.



- (a) The colour at positions marked 1 and 3 are similar to the colour of 'turmeric' and the colour of 'Chilli powder', respectively. Is the above statement correct or incorrect ?  
 (b) Which two positions correspond to the colour of solution of copper sulphate and signal used to move the vehicles ?  
 (c) Light of colour of chilli powder bends the most while the light of colour of brinjal bends the least. Is the statement correct ?  
 (d) Which of the following statements is correct regarding the propagation of light of different colours of white light in air ?  
 (i) Red light moves fastest  
 (ii) Blue light moves faster than green light  
 (iii) All the colours of the white light move with the same speed in air  
 (iv) Yellow light moves with the mean speed as that of the red and the violet light

4

5. Which of the following statements about the given reaction are correct?



- (i) Iron metal is getting oxidised.
- (ii) Water is getting reduced.
- (iii) Water is acting as reducing agent.
- (iv) Water is acting as oxidising agent.

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(a) (i), (ii) and (iii)

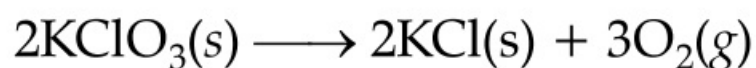
(b) (iii) and (iv)

(c) (i), (ii) and (iv)

(d) (ii) and (iv)

OR

Which of the following statements is correct about the below reaction?



- (a) It is a decomposition reaction and endothermic in nature.
- (b) It is a displacement reaction.
- (c) It is decomposition reaction, accompanied with release of heat.
- (d) It is a photochemical decomposition reaction and exothermic in nature.

1

6. Calcium phosphate is present in tooth enamel. Its nature is :

1

(a) basic

(b) acidic

(c) neutral

(d) amphoteric

7. Carbon forms four covalent bonds by sharing its four valence electrons with four univalent atoms, *e.g.* hydrogen. After the formation of four bonds, carbon attains the electronic configuration of :

1

(a) helium

(b) neon

(c) argon

(d) krypton

8. Where would you locate the element with electronic configuration 2, 8 in the Modern Periodic Table?

1

(a) Group 8

(b) Group 2

(c) Group 18

(d) Group 10

9. Oxygen liberated during photosynthesis comes from :

1

(a) water

(b) chlorophyll

(c) carbon dioxide

(d) glucose

10. In humans, the life processes are controlled and regulated by :

1

(a) reproductive and endocrine system

(b) respiratory and nervous system

(c) endocrine and digestive system

(d) nervous and endocrine system

11. Which of the following represents voltage?

1

(a)  $\frac{\text{Work done}}{\text{Current} \times \text{Time}}$

(b) Work done  $\times$  Charge

(c)  $\frac{\text{Work done} \times \text{Time}}{\text{Current}}$

(d)  $\frac{\text{Work done} \times \text{Charge}}{\text{Time}}$

12. Which of the following oxide(s) of iron would be obtained on prolonged reaction of iron with steam? 1

(a) FeO

(b) Fe<sub>2</sub>O<sub>3</sub>

(c) Fe<sub>3</sub>O<sub>4</sub>

(d) Fe<sub>2</sub>O<sub>3</sub> and Fe<sub>3</sub>O<sub>4</sub>

For question numbers 13 and 14, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below :

(i) Both A and R are true and R is correct explanation of the assertion.

(ii) Both A and R are true but R is not the correct explanation of the assertion.

(iii) A is true but R is false.

(iv) A is false but R is true.

13. **Assertion (A)** : In esterification, carboxylic acid and alcohol reacts in the presence of acid to give ester.

**Reason (R)** : Esterification is the reverse of saponification. 1

14. **Assertion (A)** : Photosynthesis is an anabolic process.

**Reason (R)** : The process of photosynthesis occurs in chlorophyll. 1

**OR**

**Assertion (A)** : Sexual reproduction increases genetic diversities and plays a role in origin of new species.

**Reason (R)** : Sexual reproduction involves formation of gametes and fusion of gametes.

### SECTION- B

**[AI]** 15. Identify the acid and the base from which sodium chloride is obtained. Which type of salt is it? When is it called rock salt? How is rock salt formed ? 3

**[AI]** 16. What is a homologous series of carbon compounds? Give an example and list its three characteristics. 3

**OR**

Two carbon compounds X and Y have the molecular formula  $C_4H_8$  and  $C_5H_{12}$  respectively. Which one of these is most likely to show addition reaction? Justify your answer. Also, give the chemical equation to explain the process of addition reaction in this case.

**[AI]** 17. Write the number of periods and groups in the Modern Periodic Table. How does the metallic character of elements vary on moving (i) from left to right in a period, and (ii) down a group ? Give reason to justify your answer. 3

18. Write three types of blood vessels. Give one important feature of each. 3

19. Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in  $F_1$  and  $F_2$  generations when he crossed the tall and short plants ? Write the ratio he obtained in  $F_2$  generation plants. 3

**OR**

List two differences between acquired traits and inherited traits by giving an example of each.

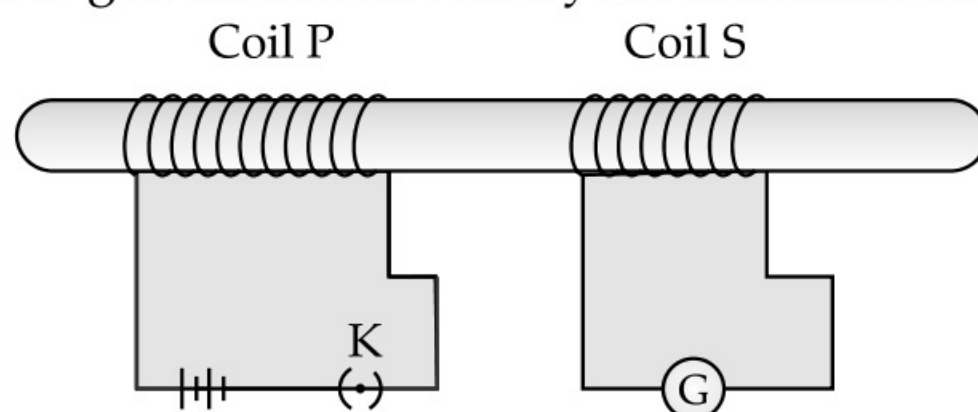
**[AI]** 20. If the image formed by a lens for all positions of an object placed in front of it is always erect and diminished, what is the nature of this lens ? Draw a ray diagram to justify your answer. If the numerical value of the power of this lens is 10 D, what is its focal length in the Cartesian system ? 3

**[AI]** 21. (a) Write Joule's law of heating.

(b) Two lamps one rated 100 W 220 V, and the other 60 W 220 V, are connected in parallel to electric main supply. Find the currents drawn by two bulbs from the line, if the supply voltage is 220 V. 3

22. (a) Define electromagnetic induction.

(b) Two coils P and S are wound over the same iron core. Coil P is connected to battery and key and the coil S is connected to galvanometer. Write your observations when :



(i) Current in the coil P is started by closing the key.

(ii) Current continues to flow in coil P.

(iii) Current in coil P is stopped by removing the key.

Explain the reason for such observation.

23. How can we help in reducing the problem of waste disposal ? Suggest any three methods. 3

OR

Define an ecosystem. Draw a block diagram to show the flow of energy in an ecosystem.

24. Write the essential function performed by ozone at the higher levels of the Earth's atmosphere ? How is it produced? Name the synthetic chemicals mainly responsible for the drop of amount of ozone in the atmosphere. How can the use of these chemicals be reduced ? 3

### SECTION- C

25. (a) List any three observations which posed a challenge to Mendeleev's Periodic Law.

(b) How does the metallic character of elements vary on moving from

(i) left to right in a period,

(ii) from top to bottom in a group of the Modern Periodic Table ?

Give reason for your answer.

5

OR

The electrons in the atoms of four elements A, B, C and D are distributed in three shells having 1, 3, 5 and 7 electrons respectively in their outermost shells. Write the group numbers in which these elements are placed in the Modern Periodic Table. Write the electronic configuration of the atoms of B and D and the molecular formula of the compound formed when B and D combine.

26. (a) List in tabular form three chemical properties on the basis of which we can differentiate between a metal and a non-metal. 5

(b) Give reasons for the following :

(i) Most metals conduct electricity well.

(ii) The reaction of iron (III) oxide [ $\text{Fe}_2\text{O}_3$ ] with heated aluminium is used to join cracked machine parts.

27. (a) Why is the use of iodised salt advisable ? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.

(b) How do nerve impulses travel in the body ? Explain.

5

OR

What is hydrotropism ? Design an experiment to demonstrate this phenomenon.

28. (a) Write the functions of each of the following parts in a human female reproductive system :

(i) Ovary, (ii) Uterus, (iii) Fallopian tube.

(b) Write the structure and functions of placenta in a human female.

5

29. When do we consider a person to be myopic or hypermetropic ? List two causes of hypermetropia. Explain using ray diagrams how the defect associated with hypermetropic eye can be corrected. 5

30. (a) With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances.

(b) In an electric circuit two resistors of  $12\ \Omega$  each are joined in parallel to a 6 V battery. Find the current drawn from the battery.

OR

An electric lamp of resistance  $20\ \Omega$  and a conductor of resistance  $4\ \Omega$  are connected to a 6 V battery as shown in the circuit. Calculate :

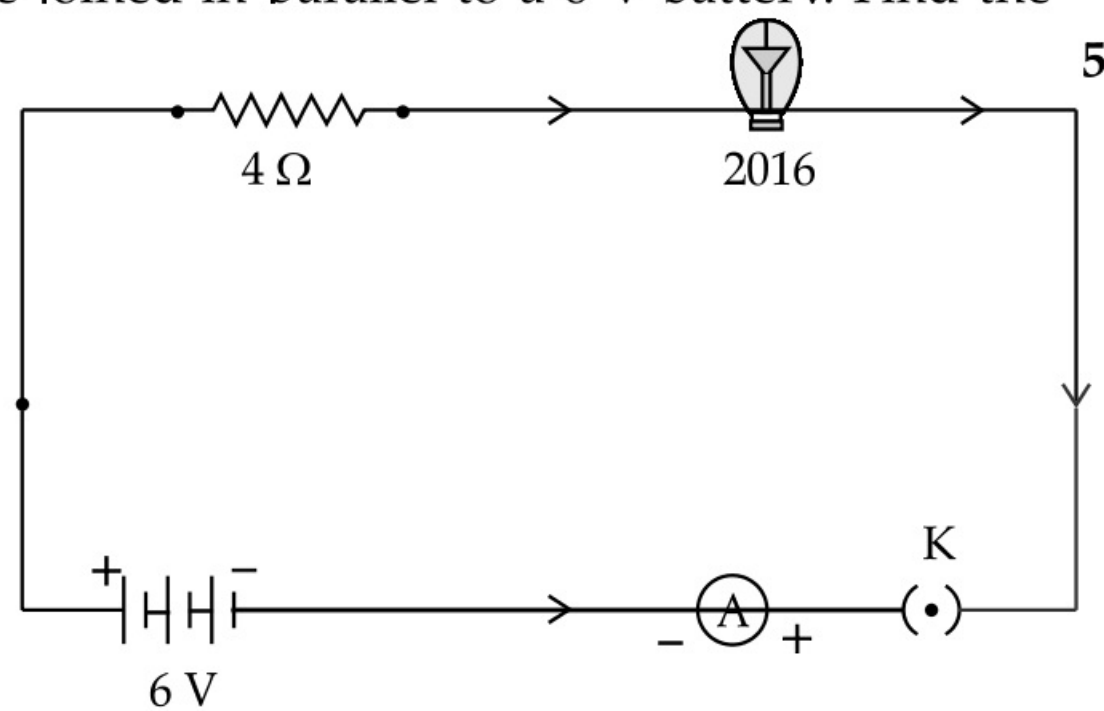
(a) the total resistance of the circuit.

(b) the current through the circuit.

(c) the potential difference across the

(i) electric lamp and (ii) conductor, and

(d) power of the lamp.



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