

## SCIENCE (THEORY)

Set-I

MAX. MARKS: 60

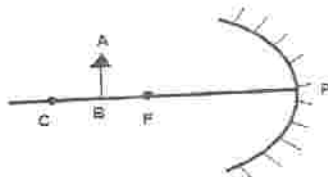
TIME ALLOWED: 2½ Hours

### GENERAL INSTRUCTIONS:

1. The question paper comprises of two sections A and B. You need to attempt both the sections.
2. All questions are compulsory.
3. There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. Only one option in such questions is to be attempted.
4. All questions of section A and all questions of section B are to be attempted separately.
5. Questions 1 to 6 in section A and 19 to 21 in section B are short question. These carry one mark each.
6. Questions 7 to 12 in section A and 22 to 24 in section B are short answer type questions and carry two marks each.
7. Questions 13 to 16 in section A and 25 to 26 in section B are also short answer type questions and carry three marks each.
8. Questions 17 and 18 in section A and question 27 in section B are long answer type questions and carry five marks each.

### SECTION A

1. Write any two examples of redox reaction from daily life. 1
2. Although acetic acid is highly soluble in water but still it is a weak acid why? 1
3. Copy the figure and show the image formation with the help of rays. 1



4. Refractive index of media A, B, C and D are:  
A - 1.33, B - 1.52, C - 1.44, D - 1.65  
In which of the four media is the speed of light  
(1) maximum and (2) minimum. 1

5. Why alkenes and alkynes are considered as unsaturated compounds? **1**
6. Which has more resistance (60W, 220V) or (100W, 220V) bulb? **1**
7. In the modern periodic table, name the following: **2**  
(a) Most reactive non - metal in the halogen family.  
(b) Most reactive metal in the alkali group.  
(c) Smallest Halogen.  
(d) Smallest Noble gas.
8. What will be the value of **2**  
(i) Current flown  
(ii) Energy loss as heat  
in a circuit having resistance 2.5  $\Omega$  and voltage 7.5 V in one hour
9. Will the following reaction take place? Explain why? **2**



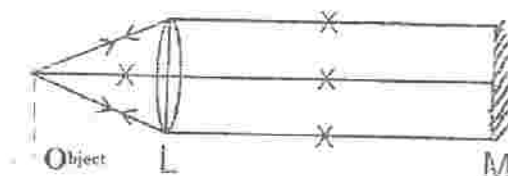
10. State Ohms law. Draw a circuit diagram to establish a relationship between potential difference across the two ends of a resistor and the current flowing through it. **2**
11. The waste materials collected from a market complex are scrap paper, thermocol, vegetable waste, tin cans and glass bottles. Which of these can be used for producing biogas? Mention any two advantages of converting these into biogas rather than burning them. **2**
12. Why are thermal power plants set up near coal field or oil fields? **2**
13. (a) State two main causes of a person developing near sightedness. How can this defect be corrected?  
(b) What is astigmatism and how is this vision defect corrected? **3**
14. Atomic radii of the elements of the second period are given below: **3**

Period II	B	Be	O	N	Li	C
At radius	88	111	66	74	152	77

- a) Arrange them in decreasing order of their atomic radii.  
b) Which elements have the largest and smallest atoms?  
c) How does the atomic radius change as you go from left to right in a period?

15. Give reason why? 3
- Hydrated salts are colourful.
  - Plaster of Paris should be stored in a moisture proof container.
  - Acids do not show acidic behavior in the absence of water.

16. The ray diagram given below illustrates the experimental set up for the determination of the focal length of a converging lens using a plane mirror 3



- What is the name given to the distance between the object and the optical centre of the lens in this diagram?
  - A convex lens has a focal length of 12cm. At what distance from the lens should an object of height 6cm be placed, so that on the other side of the lens a real and inverted image is formed 24cm away from the lens?
17. The diagram below shows a coil connected to a centre zero galvanometer G. This shows a deflection to the right when N pole of a powerful magnet is moved to the right as shown. 5



- Explain why the deflection occurs in the galvanometer?
- Does the direction of current in the coil appear clockwise or anticlockwise when viewed from end A?
- State the observation in G when the coil is moved away from N.
- State the observation in G when both coil and magnet are moved to the right at the same speed.

**OR**

- An electric bulb is rated at 50W, 220V. Calculate the energy consumed by the bulb in 20 minutes. Express your answer in commercial units of electric energy.

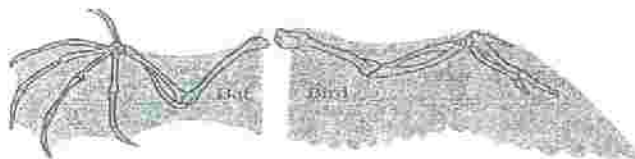
- b) Distinguish between overloading and short circuiting in a domestic circuit.
- c) Why is it essential to earth electrical appliances having metallic body?
18. An organic compound 'X' which is sometimes used as antifreeze has molecular formula  $C_2H_6O$ . 'X' on oxidation gives a compound 'Y'. The compound 'Y' reacts with sodium carbonate with lot of effervescence. Identify X and Y and write their structural formula and chemical equations for oxidation reaction and reaction with sodium hydroxide.

**5****OR**

- (a) What are the two achievements of Mendeleev's periodic table? What was the basis of classification of elements in it?
- (b) An element X (2, 8, 3) combine separately with  $NO_3^-$ ,  $(SO_4)^{2-}$  and  $(PO_4)^{3-}$  radicals. Write the formula of the three compounds so formed. To which group of the periodic table does the element 'X' belong? Will it form covalent or ionic compound? Why?

**Section B**

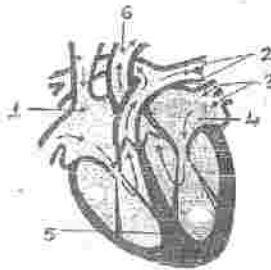
19. After vigorous exercise, you may experience cramps in your leg muscles. Why does this happen? **1**
20. Take a fish from sea water and put it in a pond. What will happen to the fish and why? **1**
21. What is the function of prostate glands and seminal vesicles? **1**
22. Give one term caption for the given picture? Define the term **2**



23. State the main function of pituitary gland. Write the effect of (i) excessive and (ii) sluggish activity of this gland on the growth of a child? **2**
24. A woman having blood group 'B' marries a man having blood group 'A' and they have four offsprings. Two children are having blood group O. One having blood group B and other having AB. **2**

- 4 -

- (i) Which blood group is (a) dominant (b) recessive,  
(ii) What are the genotypes of parents?
25. Study the food chains given below: 3  
Food chain I: plant-deer-tiger  
Food chain II: grass-frog-snake-hawk.  
a) Write the definition of trophic level.  
b) Write the consumers at the 3<sup>rd</sup> trophic level in both the chains  
c) To which consumers in both the chains will more energy be available and why?
26. What are the different methods of contraception? Give the reasons for adopting contraceptive methods. 3
27. Give a suitable caption for the figure below. 5



- a) Label parts 1 to 6.  
b) Write the function of the above parts.  
c) What do you mean by 'double circulation'?

**OR**

- a) Why is there a need for opening of stomata in leaves during day?  
b) How is food produced by desert plants, as the stomata remain closed during the day?  
c) How is excess of carbohydrates stored in plants and animals?