

**GENERAL SCIENCE, Paper-I**  
**(Physical Science)**  
*(English Version)*

Time : 2 Hours 45 Mins.]

[Maximum Marks : 50

**Instructions :**

1. There are four sections and 33 questions in this paper.
2. Answer should be written in a given answer booklet.
3. There is internal choice in Section – IV.
4. Write all the Questions visible and legibly.
5. 15 minutes are given for reading the question paper and 2 hours 30 mins. for answering questions.

**Section – I****Note :** (1) Answer all the questions.**12 × ½ = 6**

(2) Each question carries ½ mark.

1. Three bodies A, B and C are in thermal equilibrium. The temperature of B is 50 °C. Then the temperature of C is  
 (A) 55 °C            (B) 50 °C            (C) 45 °C            (D) 40 °C
2. A solution turns red litmus into blue, its pH value is \_\_\_\_\_.  
 (A) 1            (B) 4            (C) 5            (D) 10
3. **Statement P :** Optically denser medium may not possess greater mass density.  
**Statement Q :** Kerosene with high refractive Index is optically denser than water.  
 (A) Both P and Q are correct.            (B) P-correct, Q-wrong.  
 (C) P-wrong, Q-correct.            (D) Both P and Q are wrong.
4. Which of the following material cannot be used to make a lens ?  
 (A) Water            (B) Glass            (C) Plastic            (D) Clay
5. The value of least distance of distinct vision of the healthy human beings \_\_\_\_\_.  
 (A) 25 cm            (B) 20 cm            (C) 15 cm            (D) 10 cm
6. Which rule is violated in the electronic configuration  $1s^0 2s^2 2p^4$  ?  
 (A) Aufbau principle            (B) Pauli exclusion principle  
 (C) Hund's rule            (D) None of these

7. Noble gases belong to \_\_\_\_\_ group of modern periodic table.

8. Match the following :

Molecule		Bond angle
(i) Ammonia	( ) (p)	$104^{\circ}31'$
(ii) Boron trifluoride	( ) (q)	$107^{\circ}48'$
(iii) Water	( ) (r)	$120^{\circ}$

(A) (i)-(p), (ii)-(r), (iii)-(q)  
(B) (i)-(q), (ii)-(p), (iii)-(r)  
(C) (i)-(q), (ii)-(r), (iii)-(p)  
(D) (i)-(p), (ii)-(q), (iii)-(r)

9. Which element is not having 8 electrons in its valency shell among noble gases ?

Answer 10 and 11 questions based on below table :

Material	Silver	Iron	Drinking Water	Air
Specific Resistance ( $\Omega\text{-m}$ ) at $20^{\circ}\text{C}$	$1.59 \times 10^{-8}$	$1 \times 10^{-7}$	$2 \times 10^{-1}$	$1.3 \times 10^{16}$

10. In which material the electric current is more ?

11. What is the SI unit of Specific Resistance ?

12. The impurity present in the ore is called as \_\_\_\_\_.

- (A) Gangue      (B) Flux      (C) Slag      (D) Mineral

### Section - II

Note : (1) Answer all the questions.

$8 \times 1 = 8$

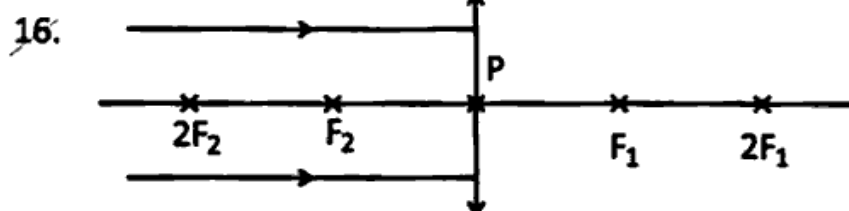
(2) Each question carries 1 mark.

13. Convert  $27^{\circ}\text{C}$  into Kelvin scale.

14. Refractive index of glass relative to water is  $\frac{9}{8}$ . What is the refractive index of water relative to glass ?

15. Write any two material required in the activity.

"To find the refractive index of a glass slab."



Complete the ray diagram with appropriate refracted rays.

17. An electron in an atom has the following set of four quantum numbers of  $3s^1$  :

n	l	$m_l$	$m_s$
3	0	0	$+\frac{1}{2}$

Then write four quantum numbers for  $2s^1$  electron.

18. Write the Mendeleef's Periodic law.
19. An element X belongs to 3<sup>rd</sup> period and group 2 of the modern periodic table. Predict the number of valence electrons and write.
20. Mention the daily life application of thermite process.

### Section – III

Note : (1) Answer all the questions.

8 × 2 = 16

(2) Each question carries 2 marks.

21. Your friend is asked to differentiate between evaporation and boiling. What questions would you ask to make him to know the differences between evaporation and boiling ?
22. Write any two daily life uses of lenses.
23. How do you appreciate the work of ciliary muscles in the eye ?
24. Write the material required to prove Ohm's law activity.
25. Fill the table given below :

Baking Soda	Washing Soda	
$\text{NaHCO}_3$		$\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$

26. Explain the terms in  $nI^x$  method.
27. Predict the reasons for low melting point for covalent compounds when compared with ionic compounds.
28. Write the names of any two ores of Iron.

### Section – IV

Note : (1) Answer all the questions.

5 × 4 = 20

(2) Each question carries 4 marks.

(3) Every Question has Internal Choice.

29. What is Myopia ? Explain the correction of the defect Myopia.

OR

Deduce the expression for the equivalent resistance of three resistors  $R_1, R_2, R_3$  ohms connected in series.

30. How do the following properties change in a group and period ?

- (i) Atomic radius
- (ii) Ionization energy
- (iii) Electron affinity
- (iv) Electronegativity

OR

Explain the formation of the  $O_2$  molecule using valence bond theory.

31. Suggest an experiment to find the specific heat of solid.

OR

How do you verify experimentally that  $\frac{\sin i}{\sin r}$  is a constant ?

32. Observe the table and answer the following questions :

Solution	A	B	C	D	E	F	G	H
pH Value	8	2	6	7	13	1	9	12

- (i) Which solution is neutral ?
- (ii) Which solutions are strong acids ?
- (iii) Which solutions are strong bases ?
- (iv) Which solutions are weak bases ?

OR

Complete the following table :

Element	Atomic Number	Electronic Configuration
Carbon	6	$1s^2 2s^2 2p^2$
Oxygen	8	
Sodium	11	
Argon	18	
Calcium	20	

33. Draw ray diagrams for the following positions with respect to convex lens :

- (i) Object is placed beyond  $2F_2$ .
- (ii) Object is placed between  $2F_2$  and  $F_2$ .

OR

Draw a neat diagram of Reverberatory furnace.