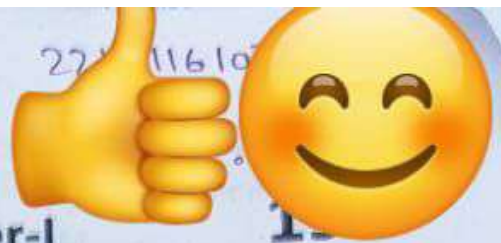## 921

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. $12 \times \frac{1}{2} = 6$
      (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 _____ C .

   (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 _____ .

6.   Which rule is violated in the electronic configuration $1s^0 \, 2s^2 \, 2p^4$?

19E   P.T.O.

7. Noble gases belong to ~~eighteenth~~ group of modern periodic table.

8. Match the following :

	Molecule			Bond angle
(i)	Ammonia	(?)	(p)	104°31'
(ii)	Boron trifluoride	(?)	(q)	107°48'
(iii)	Water	(?)	(r)	120°

(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 (Ω-m) at 20 °C	1.59×10^{-8}	1×10^{-7}	2×10^{-1}	1.3×10^{16}

10. In which material the electric current is more ? _more_

11. What is the SI unit of Specific Resistance ? _(Ω-m)_

12. The impurity present in the ore is called as _____.
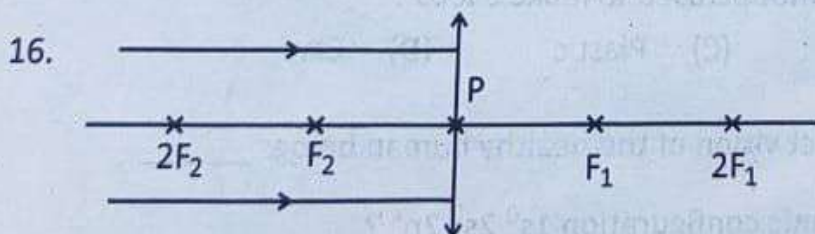(A) Gangue   (B) Flux   (C) Slag   (D) Mineral

Section – II
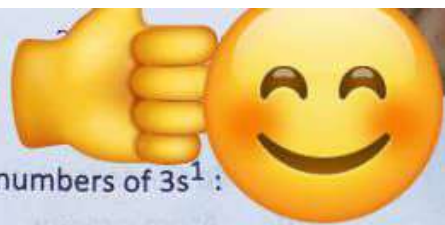
Note : (1) Answer **all** the questions.

(2) Each question carries **1** mark.

$8 \times 1 = 8$

13. Convert 27 °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."

16.

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	$+\dfrac{1}{2}$

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

18. Write the Mendeleef's Periodic law.

19. An element X belongs to 3rd 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. $8 \times 2 = 16$

(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	
$NaHCO_3$		$CaSO_4 \cdot \dfrac{1}{2} H_2O$

26. Explain the terms in nl^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. $5 \times 4 = 20$

(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.

P.T.O.

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 $\dfrac{\sin i}{\sin r}$ 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.

_____