GENERAL SCIENCE - PAPER I & II

PART - A (Physical Science)

Time : 3 hrs , 15 min **Max.Marks : 50**

Instructions:

1. This paper consists of **Part – A** and **Part – B**
2. **Part – A** contains questions from Physical Science and **Part – B** contains from Biological Science.
3. **Part – A** and **Part – B** contains 4 sections each.
4. There are 33 Questions in the paper.
5. There is an internal choice in **Section – IV** of **Part – A** and **Part – B**.
6. Write all the questions visibility and legibly.
7. 15 minutes are given for reading the question paper.

PART - A (Physical Science)

SECTION – I

Note : 1. Answer all the questions. **6x1=6**

2. Each question carries 1 mark.

1. Convert 40^0c into Kelvin Scale.
2. Answer the following questions by observing the table given below.

Material	Refractive Index
Water	1.33
Ice	1.31

A. Which is denser medium?

B. In which medium light travel faster?

3. Write the Lewis dot structure of Helium.
4. Write any two uses of metals in your daily life.
5. The value of the least distance of district vision of the healthy human beings…
6. Which rule is violated in the electronic configuration $1S^0\ 2S^2\ 2P^4$?

SECTION – II

Note : 1. Answer all the questions. **4x2=8**

2. Each question carries 2 mark.

7. Write any two applications of optical fibres.
8. Write any two questions to know the differences between heat and temperature.
9. Write any two questions about the "Formation of mirages'.
10. Give the names of the functional groups.

a) - CooR b) – oH

SECTION – III

Note : 1. Answer all the questions. **3x4=12**

2. Each question carries 4 mark.

11. Name the device that converts electrical energy into mechanical energy. Draw its diagram and label the parts.

12. Observe the following table and answer the questions given below.

The table contains the aqueous solutions of different substances with the same concentrations and their respective pH values.

Simple (Solutions) (Acid/Base)	A	B	C	D	E	F	G	H
pH value	8.1	1.1	5.5	13.6	3.5	9.5	7	10

i) Which one of the above acid solutions in the weakest acid? Give a reason.

ii) Which one of the above solutions is the strongest base? Give a reason.

iii) Which of the above two produce maximum heat when they to react? What does heat energy called?

iv) Which one of the above solutions has the pH equal to that of the distilled water? What is the name given to solutions of that pH value ?

13. What is Furnace? Draw Reverberatory furnace and label its parts.

SECTION – IV

Note : 1. Answer all the questions. **3x8=24**

2. Each question carries 8 mark.

3. Each question has internal choice.

14. a) Explain how the elements are classified into s, p, d and f – block elements in the periodic table and given the advantage of the kind of classification.

(or)

b) Atoms because stable by sharing electrons. Explain such kind of chemical bond with a suitable example.

15. a) Explain the formation of rainbow

(or)

b) Collect information on working of optical fibres. Prepare a report about various uses of optical fibres in your daily life.

16. a) How do you verify experimentally that the angle of refraction is more than angle of incidence when light rays travel from denser to rarer medium?

(or)

b) Compounds such as alcohols and glucose contains hydrogen but are not categorized as acids. Describe an activity to prove it.

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PART - A (Physical Science)

SECTION – I

Note : 1. Answer all the questions. **6x1=6**

2. Each question carries 1 mark.

1.  Identify which type of lens it its.

2.

Material	Resistivity (at 20^0c) (in Ω – m)
Copper	1.68×10^{-8}
Iron	1.00×10^{-7}

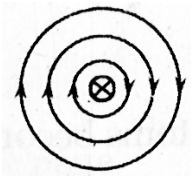
3. Write an example for Doberiner's traid.
4. Galena is an ore of which metal?
5. What is the direction of field lines in their inner side of a solenoid?
6. The refractive Index of a transparent material is $\frac{3}{2}$. What is the speed of light in that medium?

SECTION – II

Note : 1. Answer all the questions. **4x2=8**

2. Each question carries 2 mark.

7. For what purpose you utilize the solution water added to Ethanoic acid.
8. The magnetic lines observed in experiment are mentioned in the adjacent figure. Then show the direction of the current flowing through the wire.



9. Sun appears red in colour during sunrise and sunset. Give reason.
10. Mention any two uses of graphite in day to day life.

SECTION – III

Note : 1. Answer all the questions. **5x4=20**

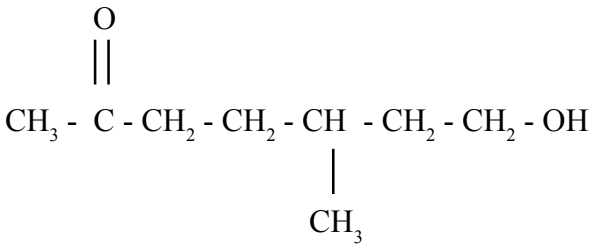
2. Each question carries 4 mark.

11. A student kept the double convex lens in air with spherical surfaces of radii R_1 = 30 cm and R_2 = 60 cm. Take refractive index of lens is n= 1.5 what is the focal length of the double convex lens?

12. An element has atomic number 17.

Where would you expect this element in the periodic Table? Why?

13.



Observe the structure and answer the following .

a) Write the name of Principal functional group present in the compound.

b) Identify the Parental chain in the compound.

c) What are the substituents in the above compound?

d) Name the above compound as per IUPAC nomenclature.

SECTION – IV

Note : 1. Answer all the questions. **3x8=24**

2. Each question carries 8 mark.

3. Each question has internal choice.

14. a) What is refining of metals? Explain some methods of refining.

(or)

b) Explain (i) Aufbau Principal (ii) Hund's rule with an example ach.

15. a) Write an activity to show that the solutions of compound like alcohol and glucose do not show acidic character even through they are having hydrogen.

(or)

b) Which quantity determines the direction of heat flow? Do an experiment to support this?

16. a) Explain the working of AC electric generator with a neat diagram.

(or)

b) i) Explain why dogs pant during hot summer days using the concept of evaporation.

ii) Why do we get dew on the surface of a cold soft drink bottle kept in open air?

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PART - A (Physical Science)

SECTION – I

Note : 1. Answer all the questions. **6x1=6**

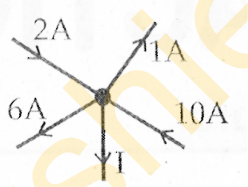
2. Each question carries 1 mark.

1. What happens to the light ray, when it strikes the interface normally?
2. Identify the wrong statement.

   X : Acids react with metals and produce Co_2 gas

   Y : Acids react with metals and produce H_2 gas
3. Which of the following is not an alkane?

   CH_4, C_3, H_8, C_2H_4 , C_5H_{12}
4. What is the value of I in the given figure?



6. A : The shape of methane molecule is tetrahedron.

   B : In methane central atom has 4 bond pairs without any lone pair.

a) Both A and R are false.

b) A is true ; R is false

c) Both A and R are true ; R is correct explanation of A.

SECTION – II

Note : 1. Answer all the questions. **4x2=8**

2. Each question carries 2 mark.

7. Write any two uses of bleaching powder.
8. What is an ore? On what basis a mineral is choosen an ore?
9. In a circuit of three resistors of 50 , 100 and 150 are connected in series, compare the current passing through the three resistors.
10. What would be the final temperature of a mixture of 50 g of water at 20^0c temperature and 50g of water at 40^0c temperature.

SECTION – III

Note : 1. Answer all the questions. **3x4=12**

2. Each question carries 4 mark.

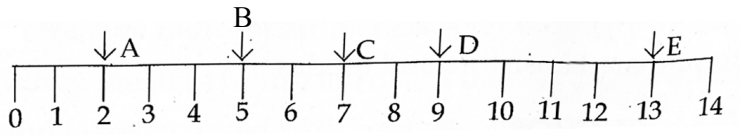
11. Deduce an expression for the equivalent resistance of three resistors connected in series

12. Draw ray diagrams for the following positions for convex lens.

i) Object is placed beyond $2F_2$

ii) Object is placed in between F2 and optic centre P.

13.



Based on the above PH Scale values, answer the following questions.

1. Which is the strongest acid among A, B, C, D, E?
2. Which is the strongest base among A, B, C, D, E?
3. Which is the weakest base among A, B, C, D, E?
4. Which is neutral in natural among A, B, C, D, E?

SECTION – IV

Note : 1. Answer all the questions. **3x8=24**

2. Each question carries 8 mark.

3. Each question has internal choice.

14. a) Explain Aufbau Principal with an example.

(or)

b) Explain the formation of sodium chloride and calcium oxide on the basis of the concept of electron transfer from one atom to another atom.

15. a) Explain (i) why stars appear twinkling?

(ii) Brilliance of Diamond

(or)

b) Explain the working of electric motor with a neat diagram.

16. a) How do you verify experimentally that the focal length of a convex lens is increased when it is kept in water?

(or)

b) Explain the reaction of acids with carbonates and metal hydrogen carbonates?