**MODEL PAPER - 3**

**GENERAL SCIENCE, Paper – I & II**
**(English Version)**

**Time: 3 Hours 15 Minutes** **Maximum Marks: 100**

***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 visibly and legibly.
7. 15 minutes are given for reading the question paper.

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## PART – A (PHYSICAL SCIENCE)

### SECTION I **6 x 1 = 6**

**Notes:** 1. Answer **all** the questions.
2. Each question carries **1** mark.

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1. Convert $30^0$C into Kelvin scale.
2. Define Dispersion of light?
3. Why do stars appear twinkling?
4. What happens when a small piece of sodium is dropped into ethanol?
5. Mention two methods which produce very pure metals?
6. Draw the shape of s-orbital.

### SECTION II **4 x 2 = 8**

**Notes:** 1. Answer **all** the questions.
2. Each question carries **2** marks.

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7. Give the names of functional groups (i) -CHO (ii) -C=0 (ii) –COOR (iv) –OH
8. Your friend is unable to understand $nl^x$ . What questions will you ask him to understand $nl^x$ method.
9. Complete the table.

| Orbital | No.of orbitals | Maximum no.of electrons |
|---|---|---|
| S | | 2 |
| | 3 | 6 |
| d | 5 | |
| f | | 14 |

10. Frame some questions to know about the formation of mirage.

### SECTION III **3 x 4 = 12**

**Notes:** 1. Answer **all** the questions.
2. Each question carries **4** marks.

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11. Draw a neat diagram of Reverboratory furnace and label it neatly.
12. Observe the table and answer the following questions

| Substance | Specific heat | |
|---|---|---|
| | In cal/g-°C | In J/kg-K |
| Lead | 0.031 | 130 |
| Mercury | 0.033 | 139 |
| Brass | 0.092 | 380 |
| Zinc | 0.093 | 391 |
| Copper | 0.095 | 399 |
| Iron | 0.115 | 483 |
| Glass(flint) | 0.12 | 504 |
| Aluminum | 0.21 | 882 |
| Kerosene oil | 0.50 | 2100 |
| Ice | 0.50 | 2100 |
| Water | 1 | 4180 |
| Sea water | 0.95 | 3900 |

a) What is the SI unit of Specific heat?
b) Which metal is best for cooking utensils? Why?
c) Which metal is slowly heated up among all given substance?
d) How much heat energy is required to rise $1^0$ C of water of 1 gram?

13. How do you appreciate the role of molecules in the atmosphere for the blue colour of the sky?

## SECTION IV

**3 x 8 = 24**

**Notes:** 1. Answer **all** the questions.
2. Each question carries **8** marks.
3. Each question has internal choice.

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14. Explain the working of electric motor with a neat diagram

**(OR)**

Deduce the expression for the equivalent resistance of three resistors connected in parallel.

15. What is a periodic property? How do the following properties change in a group and period? Explain
a) Atomic radius b) Ionization energy c) Electron affinity d) Electronegativity

**(OR)**

What is hybridisation? Explain the formation of $BeCl_2$ molecule using hybridisation.

16. How do you find the focal length of a lens experimentally?

**(OR)**

What is meant by "water of crystallization" of a substance? Describe an activity to show the water of crystallization.