



XI-SCI : Physics
Thermal Properties of Matter,

DATE:

TIME: 1 hour 30
minutes

MARKS: 25

SEAT NO:

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Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer.

(4)

1. Consider the following statements.
(I) The coefficient of linear expansion has dimension K^{-1}
(II) The coefficient of volume expansion has dimension K^{-1}
A) I and II are both correct B) I is correct but II is wrong
C) II is correct but I is wrong D) I and II are both wrong
2. A glass bottle completely filled with water is kept in the freezer. Why does it crack?
A) Bottle gets contracted B) Bottle is expanded
C) Water expands on freezing D) Water contracts on freezing
3. If pressure of a gas is increased by 20% at constant temperature, the percentage change in its volume is
A) 16.67 % decrease B) 16.67 % increase
C) 20 % increase D) 20 % decreases
4. If the temperature in Fahrenheit scale is $140^{\circ}F$ then the same temperature on Kelvin scale, will be
A) 60.15 K B) 213.15 K
C) 333.15 K D) 413.15 K

Q.2 Answer the following.

(3)

1. Define : Bad conductors/Insulators.
2. How a steel wheel is mounted on an axle to fit exactly?
3. Why gases do not have definite size and shape?

Section B
Attempt any Four

- Q.3 Explain thermocouple. **(2)**
- Q.4 How does anomalous behaviour of water helps aquatic life? **(2)**
- Q.5 Are freezing point and melting point same with respect to change of state? Comment. **(2)**
- Q.6 Explain temperature gradient. **(2)**
- Q.7 Specific latent heat of vaporization of water is 2.26×10^6 J/kg. Calculate the energy needed to change 5.0 g of water into steam at $100^{\circ}C$ **(2)**

- Q.8 The rate of flow of heat through a copper rod with temperature difference 30°C is 1500 cal/s . Find the thermal resistance of copper rod. (2)

Section C
Attempt any Two

- Q.9 Explain change of state from liquid to gas. (3)
- Q.10 What is absolute zero? (3)
- Q.11 In a random temperature scale X, water boils at 200°X and freezes at 20°X . Find the boiling point of a liquid in this scale if it boils at 62°C . (3)
Given :

Section D
Attempt any One

- Q.12 Why steam at 100°C causes more harm to our skin than water at 100°C ? (4)
The volume of a gas varied linearly with absolute temperature if its pressure is held constant. Suppose the gas does not liquefy even at very low temperatures, at what temperature the volume of the gas will be ideally zero?
- Q.13 Explain area expansion. (4)