

## THERMODYNAMICS

**General Instructions:** Answer all the questions. If you are unable to answer any question, go through the page number that is given against that particular question in the text book. You can find the answer.

### Test Paper-I

**MAX MARKS: 30**

**TIME: 90Mts**

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|----|---|------|---|
| 1  | What is Thermodynamics?   | P299 | 1 |
| 2  | What do you understand from the word equilibrium of a system in mechanics?  | P299 | 1 |
| 3  | When can you say that a system is in thermodynamic equilibrium?   | P299 | 1 |
| 4  | State and explain " <b>zeroth Law of Thermodynamics</b> "   | P300 | 2 |
| 5  | What is the difference between heat and temperature?  | P300 | 1 |
| 6  | What is internal energy of a system? Give the factors on which the internal energy of a system depends up on.   | P301 | 2 |
| 7  | What are the ways of changing internal energy of a system?  | P301 | 2 |
| 8  | What are the modes which can alter the internal energy of a system?   | P301 | 1 |
| 9  | What is the Internal energy of a gas enclosed in a box and the box is at rest? What is the internal energy of the gas if the box is moving with a velocity $v$ ?  | P302 | 2 |
| 10 | Differentiate between Heat and Work. Also state <b>First Law of Thermodynamics</b> . Find the change in internal energy for 1g of water in going from liquid to vapour phase. Given that latent heat of water is 2256J/g and at atmospheric pressure, 1 g of water has a volume of 1cm <sup>3</sup> in liquid phase and 1671 cm <sup>3</sup> in vapour phase. | P303 | 3 |
| 11 | Define specific heat capacity of a substance. Give the factors on which the specific heat capacity of a substance depends upon. Also give the SI unit of measurement of specific heat capacity  | P303 | 2 |
| 12 | What is molar specific heat capacity of a substance? Give the formula to find the same. Give the factors on which molar specific heat capacity of the substance depends on.   | P303 | 2 |
| 13 | Plot the graph showing the variation of variation of specific heat capacity of water with temperature. What conclusion that you can draw from this graph?   | P304 | 2 |
| 14 | Define mechanical equivalent of heat. What is its value in SI unit? Give the importance of it   | P304 | 2 |

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|----|--|------|---|
| 15 | Derive the relation $C_p - C_v = R$  | P304 | 3 |
| 16 | How many kinds of thermodynamic state variables are there? What are they?<br>How identify the difference between them? | P305 | 3 |

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