22U607 (Pages: 2) Name : .....

Reg. No : .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2025

(CBCSS-UG)

(Regular/Supplementary/Improvement)

CC19U PHY6 B10 / CC20U PHY6 B10 - THERMODYNAMICS

(Physics - Core Course)

(2019 Admission onwards)

Time: 2 Hours Maximum: 60 Marks

Credit: 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. What is meant by microscopic point of view?
2. Define temperature.
3. Distinguish between adiabatic work and diathermic work.
4. What is meant by heat capacity?
5. Draw Pv versus P graph at constant temperature in the range of boiling point of water.
6. Write down the mayers relation and explain the symbols used.
7. What is heat engine?
8. Express entropy change of ideal gas in terms of temperature and pressure.
9. What is external mechanical irreversibility process?
10. What is the significance of thermodynanmic potential?
11. Write down the four Maxwells relationships.
12. What is triple point?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Distinguish between heat and work.
14. Distinguish between Reversible and Irreversible process.
15. The efficiency of a ideal engine is 0.2. If the temperature of the sink is lowered by 20°C, the efficiency becomes 0.25. Find the temperature of the source and sink.
16. Derive the expression for the change in entropy of a perfect gas.

17. Derive an expression for the entropy of ideal gas in terms of temperature and volume.

18. Discuss the first order phase transition in detail.

19. Explain the Clausius Clapeyron equation and phase diagrams.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. What do you mean by Quasi static adiabatic process. Obtain an expression for equation of state interms of (P, V) , (P, T) and (T, V)

21. Discuss the theory of Thermodynamic scale of temperature. Show that the ideal gas temperature and the thermodynamic temperature scale are numerically equal

(1 × 10 = 10 Marks)

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