

35132

MSc. DEGREE EXAMINATION – OCTOBER 2015
THIRD SEMESTER
Material Science & Nano Technology
Paper II –THERMODYNAMICS

Time: 3 Hours

Max. Marks: 75

PART – A (5 X 3 = 15 Marks)

Answer any FIVE questions.

Each Question carries Three (3) marks.

Each Answer should not exceed One (1) page.

1. Write about macroscopic variables in thermodynamics.
2. Define isochoric, cyclic and free expansion processes in thermodynamics.
3. Deduce the equations of internal energy and enthalpy from first law of thermodynamics.
4. Explain Kelvin and Plank statements on second law of thermodynamics.
5. What is T-S diagram and what is P-V diagram.
6. Explain Joule - Thomson coefficient and mention its significance.
7. Write the difference between Rankine cycle and Carnot cycle.
8. State and explain Dalton's law of gases.

PART-B (4x15=60 Marks)

Answer ALL questions

Each Question carries Fifteen (15) marks

Each Answer should not exceed Six (6) pages

9. What is an indicator diagram? What is its importance? Show that the work done depends upon the path along which the system is taken
(OR)
10. Explain about thermal equilibrium and Zeroth law of thermodynamics.
11. Describe the Carnot cycle. Calculate the work done per cycle of operation and obtain an expression for its efficiency.
(OR)
12. Explain the Clausius theorem. How is entropy related to this theorem?
13. Obtain the first and second Tds equations.
(OR)
14. Starting from thermodynamic potentials, derive the Maxwell's thermodynamic equations. What is their importance?
15. Discuss air standard Otto cycle and Air standard Diesel cycle.
(OR)
16. Explain the working of Refrigerator basing on vapour compression type.

