FACULTY OF ENGINEERING
B.E. 2/4 (Automobile Engg.) II-Semester (Main) Examination, June 2014

Subject : Thermal Engineering

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.
Assume any missing data suitably.

PART – A (25 Marks)

1   State the application of zeroth law of thermodynamics.
2   What do you understand by PMM1?
3   State Kelvin Planck statement of Second Law of thermodynamics.
4   Define COP for a refrigerator.
5   What is concept of reheating in Gas turbine cycle?
6   Show Brayton Cycle on T-s plot.
7   Define volumetric efficiency for reciprocating compressor.
8. How does vapour absorption refrigeration system differ from vapour compression refrigeration system?
9   State Stefan Boltzman law.
10 Define LMTD for a heat exchanger.

PART – B (50 Marks)

11 Explain in detail the application of first law of thermodynamics for open systems.

12 Prove that Kelvin Planck's and Clausius statements of second law are equivalent.

13 Explain various processes of Rankine cycle using T-s plot. In what respect Rankine cycle different from Carnot cycle.

14 For a two stage reciprocating compressor, obtain expressions for work done and isothermal efficiency. What is the condition on intermediate pressure for minimum work.

15 Derive an expression for overall thermal conductivity for heat transfer through a composite cylindrical wall.

16 (a) Explain the differences between free and forced convection heat transfers.
    (b) Obtain an expression for entropy change for closed system undergoing polytropic process.

17 (a) Discuss about Carnot's theorems.
    (b) Write short notes on intercooling and regeneration employed in Gas turbine cycles.

*****