

V72/BAM108/EE/20160524

Time : 3 Hours

Marks : 80

Instruction :

1. All Questions are Compulsory.
 2. Each Sub-question carry 5 marks.
 3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
 4. Question paper of 80 Marks, it will be converted in to your programme structure marks.
-

1. Solve any **four** sub-questions.
 - a) What is Thermodynamics? State the Microscopic and Macroscopic view point in Thermodynamics. 5
 - b) Explain System, Boundary and Surrounding with help of diagram. 5
 - c) Explain Closed, Open and Isolated system with proper diagram. 5
 - d) What is Thermodynamics Equilibrium? Explain its three types. 5
 - e) Explain Reversible and Irreversible Process. Give two examples each. 5
2. Solve any **four** sub-questions.
 - a) Explain Energy. 5
 - b) Explain first law of thermodynamics. 5
 - c) Explain Reversible Constant Volume Process with required diagram. 5
 - d) Explain Reversible Constant Pressure Process with required diagram. 5
 - e) Explain Reversible Isothermal Process with required diagram. 5
3. Solve any **four** sub-questions.
 - a) Explain Cyclic Heat Engine with required cycle diagram. 5
 - b) Draw cyclic refrigeration plant and explain its working. 5
 - c) Draw cyclic heat plant and explain its working. 5
 - d) Derive Thermal Efficiency of Heat Engine. 5
 - e) A steam power plant produces 50 MW of net work while burning fuel to produce 150 MW of heat energy at the high temperature. Determine the cycle thermal efficiency and the heat rejected by the cycle to the surroundings. 5

4. Solve any **four** sub-questions.
- a) Explain Otto Cycle and derive expression for air standard efficiency of Otto Cycle. 5
 - b) Explain Diesel Cycle and its process with a required diagram. 5
 - c) Explain Rankine Cycle with a neat cyclic diagram and explain its various stages. 5
 - d) Write a note on Viscosity and Dynamic Viscosity. 5
 - e) A vertical cylinder of 0.075 metres diameter is mounted concentrically in a drum of 0.076 metres internal diameter. Oil fills the space between them to a depth of 0.2 m. The torque required to rotate the cylinder in the drum is 4 Nm when the speed of rotation is 7.5 revs/sec. Assuming that the end effects are negligible, calculate the coefficient of viscosity of the oil. 5

