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SECOND SEMESTER **B.Tech. (Group A)**

MID SEMESTER EXAMINATION *MARCH-2012*

ME-115 BASIC MECHANICAL ENGINEERING

Time: 1 Hour 30 Minutes *Max. Marks : 20*

Note : Question No. ***ONE*** is compulsory.
Answer any ***FIVE*** parts questions in Question No.2.
Assume suitable missing data, if any.

1[a] A gas flows steadily through a rotary compressor The gas enters the compressor at a temperature of 16°C, a pressure of 100KPa and an enthalpy of 391.2 KJ/kg. The gas leaves the compressor at a temperature of 245°C, a pressure of 0.6MPa and an enthalpy of 534.5KJ/kg. Heat transfer is negligible. Evaluate (i) the external work done per unit mass of gas assuming the gas velocities at entry and exit to be negligible (ii) the external work done per unit mass of gas when the gas velocities at entry is 80 m/s and that at exit is 160 m/s. 4

[b] Differentiate between (i) microscopic view point and macroscopic view point(ii) Reversible process and Irreversible process. 2

[c] Explain the following (i) concept of contimum (ii) point function and path function (iii) gauge pressure and (iv) Thermodynamic equilibrium. 2

[d] Show from Ist law of thermodynamics that work in an adiabatic process is given by :-

$$W_{1-2} = \frac{P_1V_1 - P_2V_2}{\gamma - 1}$$ 2

OR

[e] Show from Ist law of thermodynamics the work in a polytropic process is given by:-

$$W_{1-2} = \frac{P_1V_1 - P_2V_2}{n-1}$$ 2

2[a] Discuss types of welding. Also explain welding defects. 2

[b] Name different pattern materials and pattern allowances. What are important moulding materials? 2

[c] Explain different types of flames with their applications. 2

[d] Explain the different elements of gating system. 2

[e] State that principle and working of metal arc welding? 2

[f] Explain the casting process and various casting defects. 2