Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

BE-203

B.E. I & II Semester

Examination, December 2016

Basic Mechanical Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is cast iron?
   b) What is carbon steel?
   c) Explain the Hook's law.
   d) Explain the various mechanical properties of material.

   OR

   Give a brief classification of engineering materials.

2. a) What is the use of Brittle lacquer method?
   b) What is the use of dynamometer?
   c) Classify the temperature measurement instruments.
   d) With the help of neat sketch explain the working of micrometer.

   OR

   Give a general classification of milling machines.

3. a) Write the Newton's law of viscosity .
   b) What do you understand by the term kinetic energy?

   c) Differentiate compressor with a pump.
   d) Explain with suitable diagram working of a fluid coupling.

   OR

   A pipe of 200 m has a slope of 1 in 100 and tapers from 1 m diameter at the high end to 0.4 m at the low end rate of water flow is 4000 *l*/min. if the pressure at the high end is 50 kpa, find the pressure at the low end.

4. a) What is latent heat of vaporization?
   b) What is dryness fraction?
   c) What is draught? Write various types.
   d) Steam at a pressure of 10 bar and a dryness of 0.9 enters a superheater and leaves at a temperature of 300°C without a drop in pressure. How much heat has been gained by the steam per kg? Also determine the change in its internal energy. Consider specific heat at constant pressure C_{ps}=2.3 kJ/kg K.

   OR

   Discuss the vapour compression refrigeration system with neat sketch.

5. a) What is clearance volume?
   b) Define volumetric efficiency of a engine.
   c) Name the different parts of a steam engine.
   d) Explain the working of four stroke diesel engine with P-V diagram.

   OR

   A double acting steam engine has a single cylinder of diameter 700 mm by 900 mm and develops 450 kW Indicated power at 90 rpm. Pressure at the point of cut off is 12 bar, back pressure is 1.3 bar and diagram factor is 0.76 calculate the expansion ratio.

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