PVP 14

Code: EC2T3

I B.Tech - II Semester – Regular Examinations – JULY 2015

ELEMENTS OF MECHANICAL ENGINEERING
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11x 2 = 22 M

1. a) What are the important components of an Internal Combustion Engine?

b) Draw the T-s plot for a 2-stroke S.I Engine.

c) What is a quasi – static process?

d) Write the difference between Heat and Work.

e) What is zeroth law of Thermodynamics?

f) What is the difference between Soldering & Brazing?

g) What are the advantages of casting process?

h) What is working stress?

i) Define stress, strain and Young's Modulus of a material.

j) Write the difference between centroid and centre of gravity.

k) Define radius of gyration.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) Explain the functions of pattern in the casting process. 8 M

   b) Discuss various pattern allowances. 8 M

3. a) List five important differences between the design and operating characteristics of Spark Ignition and Compression Ignition Engines. 7 M

   b) Describe the working of a 2-stroke Engine. Sketch its indicator diagram. 9 M

4. a) State the first law of Thermodynamics for a closed cycle undergoing a cycle. 8 M

   b) Explain reversible and irreversible processes. 8 M

5. a) Find the Young's Modulus of a brass material of diameter 25 mm and a length of 250 mm which is subjected to a tensile load of 50 KN when the extension of the rod is equal to 0.3 mm. 6 M

   b) Explain in detail, the behavior of mild steel when subjected to a load test till failure. 10 M

6. a) Derive equation for parallel axis theorem. 7 M

b) Calculate the centroid for the section shown in below figure: 9 M