PVP 12

Code: **CE1T5**

I B.Tech - I Semester – Regular Examinations February - 2014

BASIC MECHANICAL ENGINEERING
(CIVIL ENGINEERING)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain briefly various types of sand moulds and what are the advantages of green and dry sand moulds? 8 M

   b) Explain the properties of moulding sands. 6 M

2. a) Differentiate between Soldering and brazing. 7 M

   b) Describe briefly about various work holding devices in a simple lathe with neat sketches. 7 M

3. a) Explain briefly the following with neat sketches
      i) Spur rack and pinion
      ii) Bevel gears
      iii) Worm gears 9 M

   b) Explain briefly about open belts and cross belts. 5 M

4. a) What are the essentials of a steam power plant equipment? Compare the advantages of steam power plant over Hydro electric power plant. 7 M

b) What is wind energy? Explain with neat sketch about working of wind power plant. 7 M

5. a) Define C.O.P. of a refrigeration, what is meant by 1Ton of refrigeration? 6 M

b) What are the advantages of vapor compression refrigeration system and explain its applications. 8 M

6. a) Explain the working principle of 2 Stroke diesel engine with neat sketch. 7 M

b) What are the advantages and disadvantages of 4stroke engines over 2 stroke engines 7 M

7. a) Explain the following terms in brief
   i) Elasticity and Plasticity
   ii) Hooke's law
   iii) Poisson' ratio
   iv) Working stress 8 M

b) A hydraulic press exerts a total load of 3.5 Mega Newtons. This load is carried by two steel rods supporting the upper head of the press. If the stress in each rod is $85N/mm^2$ and $E= 210KN/mm^2$. Find

i) diameter of the rods

ii) extension in each rod if the length of the rod is 2.5mts. 6 M

8. a) Briefly explain the following properties

i) Tensile strength

ii) Malleability

iii) Hardness 6 M

b) Briefly explain the following properties

i) Absolute permeability

ii) Thermo electricity

iii) Temperature co-efficient of resistance (α_T)

iv) Corrosion resistance 8 M