UNIVERSITY OF PUNE
[4361]-114
F. E. (Mechanical Engineering)
Examination-2013
BASIC MECHANICAL
ENGINEERING
(2012 Pattern)

[Time: 2 Hours]   [Max. Marks: 50]
[Total No. Of Questions: 08]   [Total No. Of Printed Pages: 2]
Instructions:
> *(1) Assume suitable data, if necessary.*
> *(2) Neat diagrams must be drawn wherever necessary.*
> *(3) Use of Calculator is permitted.*

Q1) A) Explain with neat sketch flange coupling.   [06]
     B) Explain the factors affecting the selection of material.   [06]
                              OR

Q2) A) Differentiate between flat belt drive and V belt drive.   [06]
     B) Write a note on four bar mechanism.   [06]

Q3) A) Explain with sketches the different stages involved in manufacturing [07]
        of sand casting.
     B) With neat sketches explain surface grinding and cylindrical grinding [06]
        operations.
                              OR
Q4) A) Explain with neat sketch the major parts of a center lathe machine. [07]
     B) Draw self explanatory sketches of various operations performed in [06]
        sheet metal working.

Q5) A) Define thermodynamic system. Explain its types with examples.   [04]
     B) Explain second law of thermodynamics for heat engine.   [04]
     C) A heat engine operates between source and sink temperatures of
        235^0 C and 30^0 C respectively. If heat engine receives 35KW
        from the source, find the net work done by the engine, the heat rejected
        to the sink by the engine and the efficiency of engine. Draw the

1

sketch of system.   [05]

OR

Q6) A) State various statements and limitations of first law of   [04]
     thermodynamics.

   B) Define: Heat source, Heat sink, Thermal efficiency and   [04]
      Coefficient of performance.

   C) A U tube manometer is used to measure the pressure of a gas in the   [05]
      pipe. The level of liquid in the manometer arm open to the atmosphere
      is 170 mm lower than the level of the liquid connected to the gas pipe.
      The liquid in the manometer has specific gravity of 0.8. Find the
      absolute pressure of the gas if barometer reads 76 cm of mercury.
      Take the density of mercury as 13600 Kg/m^3. Draw the sketch of
      system.

Q7) A) Differentiate between fire tube boiler and water tube boiler.   [06]
    B) With neat sketches explain principle of working of four stroke   [06]
       petrol engine.

OR

Q8) A) Write a note on hydro-electric power plant.   [06]
    B) With neat sketch explain window air conditioner.   [06]