Seat
No.

F.E. (Semester – II) Examination – 2014
BASIC MECHANICAL ENGINEERING
(2012 Pattern)

Time : 2 Hours   Max. Marks : 50

Instructions *:* 1) *Attempt **four** questions : Q. No. **1** or **2**, Q. No. **3** or **4**, Q. No. **5** or **6***
          *and Q. No. **7** or **8**.*
     2) *Figures to the **right** indicate **full** marks.*
     3) *Assume **suitable** data if necessary.*
     4) *Neat diagrams must be drawn **wherever** necessary.*
     5) *Use of electronic non-programmable calculator is **allowed**.*

1. A) Explain construction and working of single plate clutch with neat sketch.   **6**
   B) Explain steps in design process.   **6**

<div align="center">OR</div>

2. A) Differentiate between flat belt drive and V belt drive.   **6**
   B) Explain mechanical properties of engineering materials.   **6**

3. A) Explain with neat sketch forging process. Give advantages, disadvantages & applications.   **7**
   B) Explain working principle and basic elements of drilling machine.   **6**

<div align="center">OR</div>

4. A) With neat sketches explain surface grinding and cylindrical grinding operations.   **7**
   B) Write note on brazing.   **6**

5 A) Define intensive and extensive properties with examples.   **4**
   B) Explain first law of thermodynamics and give its limitations.   **4**
   C) A heat engine operates between source and sink temperatures of 225°C and 25°C respectively. If heat engine receives 40 KW 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 sketch of system.   **5**

<div align="center">OR</div>

6. A) Explain various types of thermodynamic system.   **4**
   B) Write note on thermocouples.   **4**
   C) A U-tube mercury manometer is used to measure pressure of oil having specific gravity 0.85 in a pipeline. The mercury-oil interface is 1.8 m above the centerline of the pipe. The difference shown by manometer is 45 cm. Calculate the oil pressure in the pipeline. Draw the sketch of system. Take the density of mercury as 13600 *Kg/m³.*   **5**

<div align="right">**P.T.O.**</div>

7. A) Write a note on steam turbine and its types. **6**

B) With neat sketches explain nuclear power plant. **6**

OR

8. A) Give the classification of boilers with examples. **6**

B) Explain in brief refrigeration, Tons of refrigeration (T.R.), Coefficient of Performance (COP).

6

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