24008

B.Tech. 2nd Semester Examination, May–2016

BASICS OF MECHANICAL ENGINEERING

Paper–ME-101-F

Common for all branches

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt **five** questions. **Question No. 1 is compulsory** and attempt at least **one** question from each section.*

1. Explain following : 4×5=20

(a) Explain any three properties of steam.

(b) What is a NC and CNC system ?

(c) What is C.O.P. of Refrigerator and Heat pump ?

(d) What is Third law of thermodynamics ?

Section–A

2. What is manufacturing process ? Explain working of Lathe machine with a neat and labelled diagram. 20

3. Explain 2nd Law of thermodynamics with reference to Kelvin Planck statement and Clausius statement in detail. 20

Section–B

4. Explain construction and working of a Francis Turbine with the help of a neat and labelled sketch. 20

5. Explain working of a Vapour Compression Refrigeration system with neat and labelled diagram in detail. Calculate its COP also. 20

Section–C

6. Explain construction and working of a single plate clutch with the help of a neat sketch. 20

7. Derive an expression for a shaft subjected to pure torsion i.e. $T/J = \tau/R = G\theta/L$. 20

Section–D

8. Explain following : 20
   (a) Principle of superposition
   (b) CNC Machine.

9. What is NC system ? Explain different component of NC system with their merits and demerits. 20