

24008

B. Tech. 1st Semester F-Scheme Examination,

December-2014

BASICS OF MECHANICAL ENGINEERING

Paper-ME-101-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt 5 questions. Question No. 1 is compulsory.

Attempt any one question from each other sections.

1. Explain the following :

- (a) Advantages of NC system
- (b) Types of load
- (c) Human comfort
- (d) Steam generator
- (e) Metal cutting
- (f) Draft tube
- (g) Brittle material
- (h) Pulley
- (i) Superheating
- (j) Yield point.

Section-A

2. (a) Discuss two statements of second law of

- (b) Find the internal energy of 1 kg of super heated steam at a pressure of 10 bar and 300°C. If this steam is expanded to 1.5 bar and dryness, find the change in internal energy. 8
- (c) Describe feed mechanism of a slotting machine. 4
3. (a) Describe various milling operations. 6
- (b) What is throttling of steam ? State limitations of throttling calorimeter. 6
- (c) Derive expression for work done in a closed system for polytropic process. 8

Section-B

4. (a) Classify hydraulic turbines on the basis of type of action with neat sketches. 8
- (b) Explain psychrometric chart with its uses. 8
- (c) Define refrigeration effect. 4
5. (a) What is a refrigerant ? State its properties. 8
- (b) Discuss the working principle of a reaction turbine. 6
- (c) What is specific speed of a hydraulic turbine ? How will you select a hydraulic turbine on the basis of specific speed ? 6

Section-C

6. (a) What is Hook's law ? State different elastic constants. 8
- (b) State the advantages of V-belt drive over Flat belt drive. 6
- (c) Differentiate stress and pressure with neat sketch. 6
7. (a) What is power transmission ? What are its primary elements ? 8
- (b) Discuss three mechanical properties of a steel material. 8
- (c) What is gear drive ? Discuss its function. 6

Section-D

8. (a) Justify the necessity for NC machines. 8
- (b) How do you classify the NC machine tools ? 8
- (c) Give the application of NC machines. 4
9. (a) Compare NC and CNC machine tools. 8
- (b) List the advantages of CNC over NC. 4
- (c) Explain general configuration of CNC system.. 8