

B. Tech. 2nd Semester Examination, May-2011

BASICS OF MECHANICAL ENGINEERING

Paper - ME-101-F

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

Note : Question No. 1 is compulsory. Each question carries equal marks. Students have to attempt five questions in total.

1. Write short notes on following :
 - (a) Zeroth law of thermodynamics.
 - (b) Coefficient of performance.
 - (c) Hook's law of poission ratio.
 - (d) Introduction to manufacturing systems 20
2. (a) Describe the lathe machine tool with neat and clean diagram in detail. 14
- (b) Explain the concept of Internal Energy. 6
3. 0.5 m^3 of wet steam at 1 bar and 15 percent dryness fraction is enclosed between a cylinder and a piston resting on stop. The atmospheric pressure and the

weight of piston are such that a pressure of 4 bar is required to lift the piston. The steam is heated until the piston reaches the upper stop where the volume is 0.60 m^3 . Heating is continued further until water exists as saturated vapour. Show the processes on T-v plane and determine 20

- (i) Final pressure
- (ii) Overall heat transfer
- 4. (a) Differentiate between the Francis and Kaplan turbines. 10
- (b) Explain the construction details and working of pelton turbine. 10
- 5. Explain the simple refrigeration vapour compression cycle in detail. 20
- 6. (a) Describe briefly various type of Gears. 10
- (b) Enumerate the means by which power can be transmitted from one shaft to another. 10
- 7. (a) Explain the stress-strain diagram for mild steel. 10

(b) Derive the relationship of the elastic constants.

10

8. Classify and explain the NC system. 20

9. (a) Explain the components of NC system. 10

(b) Differentiate between the NC and CNC system.

10