

SECTION – D

8. Explain the following :
- (a) Advantages and disadvantages of CNC machine. 10
 - (b) What is a manufacturing system ? Explain flexible manufacturing system. 10
9. (a) What are absolute and incremental methods of positioning in NC and CNC machine tools ? 10
- (b) What is NC system ? Explain different components of a NC system. 10

Roll No.

24008

B. Tech 1st Semester (Common for All Branches) Examination – December, 2017

BASICS OF MECHANICAL ENGG.

Paper : ME-101-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper.

No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions. Question No. 1 is *compulsory*. Attempt any *one* question from each Section.

1. Explain the following : 4 × 5 = 20

(a) What is Zeroth law of thermodynamics ? Explain with example.

(b) Hook's Law.

- (c) What are human comfort conditions ? Explain.
(d) Direct numerical control (DNC)

SECTION – A

2. Explain 2nd Law of thermodynamics with reference to Kelvin Planck statement and Clausius statement in detail. 20
3. (a) Find out an expression for specific enthalpy of wet steam. 6
(b) What is a lathe machine ? State its working principle. 10
(c) What is throttling ? How we can control the throttling operation ? 4

SECTION – B

4. (a) Define the COP of simple vapour compression refrigeration system. 10

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- (b) What is the principle of impulse turbine ? Explain working of Pelton turbine with neat sketch. 10

5. (a) Explain working and construction of reciprocating pump with neat sketches. 10
(b) Define one ton of refrigeration. Explain properties of an ideal refrigerants. 10

SECTION – C

6. (a) Calculate the force required to hold a weight of 20 kN suspended on a rope wrapped twice around a post. Take coefficient of friction $\mu = 0.2$. 8
(b) Derive an expression for relation between three elastic constants. 12
7. (a) Derive an expression for length of belt in crossed belt system. 12
(b) Explain clutch with neat sketch. Also explain various functions of a clutch. 8

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