

Roll No.

24008

**B. Tech 1st Semester (Common for All
Branches) Examination – February, 2022**
BASICS OF MECHANICAL ENGINEERING

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 : Question No. 1 is compulsory. Attempt *five* questions in all taking *one* question from each Section.

1. Explain the following :
- (a) Working principle of lathe machine.
 - (b) Function of manufacturing system.
 - (c) Hook's Law.
 - (d) 1st Law of Thermodynamic.
 - (e) Define creep and slip in belt drive.

5 × 4 = 20

SECTION – A

2. Draw a neat diagram of milling machine and explain the principal part and operation performed on a milling machine.

20

24008-1100-(P-3)(Q-9)(22)

P. T. O.

3. (a) How would you find Dryness fraction of steam by throttling calorimeter ? 10
- (b) Explain the following : 10
- Enthalpy of steam
 - Specific volume of steam
 - Internal energy of steam
 - Entropy of steam

SECTION - B

4. Describe, with a neat schematic arrangement, the working of a simple vapour compression refrigeration cycle. Represent the cycle on P-V and T-S plots. 20
5. Derive an expression for specific speed of hydraulic turbine. Point out how the classifications of hydraulic turbines are based on specific speed ? 20

SECTION - C

6. Derive an expression for the length of flat belt between two pulleys for open belt drive. 20
7. Establish a relationship within E, C and K. 20

SECTION - D

8. (a) What are the absolute and incremental methods of positioning in NC and CNC machine tools ? 10
- (b) Draw a neat diagram showing the main elements of a NC machine and state the function served by each element. 10

24008-1100-(P-3)/(Q-9)/(22) (2)

9. (a) How a CNC machine differs from a NC machine ? Name the main components of a CNC system. 10
- (b) Explain the difference between open and closed loop system control systems in relation to NC and CNC machine systems. 10

24008-1100-(P-3)/(Q-9)/(22) (3)