

Roll No.

OLE-3059
B. Tech. 3rd Semester (ME)
Examination – April, 2021
BASICS OF MECHANICAL ENGG.
Paper : ESC-ME-211-G

Time : Three hours]

[Maximum Marks : 75

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 any *five* questions by selecting at least any *one* question from each section. Question No. **1** is *compulsory*.

- 1.** Explain the following : $2.5 \times 6 = 15$
- (a) Uses of gear drive
 - (b) Functions of manufacturing system
 - (c) 3rd law of thermodynamics with example
 - (d) Hook's law
 - (e) Poisson's ratio
 - (f) 1st law of thermodynamics

SECTION – A

2. (a) Explain the shaper machine tool with neat and clean diagram.
(b) Explain the 2nd law of thermodynamics in detail. 15
3. Write short notes on the following : 15
- (a) Use of a steam table
(b) Find out expression for specific enthalpy of wet steam.
(c) Zeroth law of thermodynamics.

SECTION – B

4. (a) Determine the COP of Simple Vapour Compression refrigeration system.
(b) Explain specific speed for a turbine.
(c) What is the principle of Reaction turbine ? Explain working of Kaplan turbine with neat sketch. 15
5. (a) Obtain an expression for unit speed, unit discharge and unit power for a turbine. 8
(b) Describe briefly the function of various main components of Pelton turbine with neat sketches. 7

SECTION – C

6. (a) Explain gear terminology with neat sketch. 8
(b) What is Poisson's ratio ? Explain lateral and longitudinal strains with suitable example. 4
(c) Explain flexural loading. 3
7. (a) Derive an expression for relation between three elastic constants. 6
(b) Explain cone clutch with neat sketch. 6
(c) Differentiate between a fast and loose pulley. 3

SECTION – D

8. What is a manufacturing system ? Describe need of a manufacturing system. Explain its elements in detail. 15
9. What is numerical control system? What are elements of NC machines ? Describe need of NC system. 15
