

S. B. Roll. No.....

THEORY OF MACHINES
5th Exam/Mech./5317/Nov'24
(For 2018 Batch onwards)

Duration: 3Hrs.

M.Marks:75

SECTION-A

15x1=15

Q1. Do as directed.

- a. Which type of contact lower pairs has?
- b. In a simple mechanism number of links are _____
- c. The distance covered by a screw thread in one complete rotation is called _____
- d. The driver and driven pulleys both rotate in the opposite direction if they are connected by _____ belt.
- e. Write formula for ratio of tension in case of flat belt drive.
- f. Why Crowning of pulley is done?
- g. Which gear train is used in clocks?
- h. The material of the flywheel is generally _____
- i. The governor is a device to control the _____
- j. Is Hartnell governor a spring loaded governor? (T/F)
- k. _____ Mass can be balanced partially.
- l. When natural frequency of the system coincides with the external force frequency it is called ____.
- m. Balancing of _____ as well as _____ parts is complete balancing.
- n. Crank effort diagram is also called Turning moment diagram. (T/F)
- o. For low speeds Watt governor is suitable. (T/F)

SECTION-B

6x5=30

Q2. Attempt any six questions.

- i. Differentiate between machine and mechanism.
- ii. Define and derive expression for a) Limiting angle of friction b) Angle of repose
- iii. Explain Slip, Velocity ratio and Creep of Belt.
- iv. What do you mean by fluctuation of speed and fluctuation of energy?
- v. What is balancing & what are its advantages?
- vi. Describe with sketch longitudinal, transverse, torsional vibrations.
- vii. Differentiate between Flywheel and Governor.

SECTION-C

3x10=30

Q3. Attempt any three questions.

- a. Derive the relation for length of an open belt drive.
- b. Explain the different kinds of Kinematic pairs giving examples for each of them.
- c. Explain the causes of vibrations in machines, their harmful effects and remedies.
- d. Derive the expression to find out the force required to move the body up in an inclined plane.
- e. Define Hunting, Isochronisms, sensitivity, stability and sensitiveness of a governor

