S. B. Roll. No……

THEORY OF MACHINES
5th Exam/Mech./5317/Dec'22
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Give one Line answer. **15x1=15**

a. Is it necessary for resistant bodies to be rigid?
b. What type of motion is there in a screw pair?
c. Which quick-return motion mechanism is used in shapers?
d. How many minimum links are required in a chain?
e. What is maximum fluctuation of speed of a flywheel?
f. Which is more: static friction or dynamic friction?
g. What are anti friction bearing?
h. With which kind of pairs generally power is transferred?
i. Which is a positive drive: belt drive or chain drive?
j. Is flywheel lighter in weight than governor?
k. Does a governor work continuously or intermittently?
l. What are types of vibrations?
m. What is whirling speed of a shaft?
n. What are the uses of dampers?
o. Are the unbalanced rotating and reciprocating masses the causes of vibrations?

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. What is the difference between Structure and Machine?
ii. Draw a neat diagram of beam engine and explain its working?
iii. Explain Ball bearing with the help of sketch.
iv. What are the main uses of following pulleys? a) Intermediate pulleys b) Loose and Fast pulleys.
v. Explain the advantages and disadvantages of chain drive over belt drive.
vi. Define isochronism.
vii. Define the following: a) Co-efficient of fluctuation of energy b) Co-efficient of fluctuation of speed.
viii. Why the balancing of high speed machinery parts is essential?

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Write down principle, construction and working of centrifugal governors.
b. Find the power transmitted by a flat belt running over a pulley of 500mm diameter at 180 rpm. The co-efficient of friction between the belt and the pulley is 0.20, angle of rap 160^0 and maximum tension in the belt is 3000N.
c. Draw and explain turning moment diagram for a single cylinder double acting steam engine.
d. Four masses m_1, m2, m3 and $m_4$are 200kg, 300kg, 240kg and 260kg respectively. The corresponding radii of rotation are 0.2m, 0.15m, 0.25m and 0.3m respectively and the angles between successive masses are 45^0, 75^0 and 135^0. Find the position
And magnitude of the balance mass required, if its radius of rotation is 0.3m.
e. Write down causes, harmful effects and remedies of vibrations.