**MECHANICAL ENGG.**

**Sub:-THEORY OF MACHINES**

**Semester:- 4TH**

**SHORT TYPE QUESTIONS**

**CHAPTER-1**

1. Define mechanism.
2. Define link.
3. Define kinematic chain.
4. Differentiate between lower pair & higher pair.

**CHAPTER-2**

1. State the function of bearings.
2. What is the function of a dynamometer?
3. Define a clutch.
4. What is angle of repose?
5. Define coefficient of friction.
6. Define friction.

**CHAPTER-3**

1. Define module.
2. What is a reverted gear train?
3. What is open belt drive?
4. Define velocity ratio & speed ratio.
5. Define creep and slip.
6. Define circular pitch in toothed gear.
7. Define centrifugal tension.

**CHAPTER-4**

1. Define isochronism of Governor.
2. Write the function of a governor.
3. Define sensitieness of Governor.

**CHAPTER-6**

1. Define time period and amplitude with respect to vibration.
2. What is damped vibration?

**LONG TYPE QUESTIONS**

**CHAPTER-1**

1. Explain four bar mechanism with their inversion.
2. Explain sliding pair, turning pair, rolling pair and screw pair with figure.
3. Write short notes on Cam & follower.

**CHAPTER-2**

1. Derive the formula for torque transmission and power for flat pivot bearing.
2. Derive the expression for torque transmitted in case of flat collar bearing assuming uniform pressure condition.
3. With neat a sketch explain the function of absorption type of dynamometer.
4. Explain single plate clutch.
5. Derive the formula for torque transmission and power for conical pivot bearing.
6. Write the function of bearing and classify them.
7. Explain laws of friction.
8. Write short notes on Fast & loose pulley.
9. Write short notes on Simple frictional brake.
10. A multi clutch has six plates (friction rings) on the driving shaft and six plates on the driven shaft. The external radius of friction surface is 115 mm where as internal radius is 80 mm. Assuming uniform wear and coefficient of friction as 0.1, find the power transmitted at 2000 rpm. Axial intensity of pressure is not to exceed 0.16 N/mm2.
11. In a thrust bearing the external and internal radii of the contact surfaces are 210 mm and 160 mm respectively. The total axial load is 60KN and coefficient of friction is 0.05. The shaft is rotating at 380 rpm. Intensity of pressure is not to exceed 350 KN/M2. Calculate (i) power lost in overcoming the friction (ii) no of collars required for the thrust bearing (assume uniform pressure).
12. A body of weight 70N is placed on a rough horizontal plane. To just move the body on a horizontal plane, a push of 20N inclined at 20 degree to the horizontal plane is required. Find the coefficient of friction.
13. A body resting on a rough horizontal plane required a pull of 200N and inclined at 300 to the plane just to move it. It was found that a push of 240N inclined at 300 at the plane just move the body. Determine weight of body and coefficient of friction.
14. A shaft has a number of collars integral with it. The external diameter of collar is 400 mm and the shaft diameter is 250 mm. If the intensity of pressure is 0.35N/mm2 (uniform) and the coefficient of friction is 0.05, estimate
15. Power absorbed when the shaft runs at 105 r.p.m carrying a load of 150KN and
16. Number of collars required

**CHAPTER-3**

1. Explain the concept of crowning of pulleys.
2. Derive the formula for length of belt of a cross belt drive.
3. Write short notes on Compound gear train.
4. Derive the formula for length of belt of an open belt drive.
5. Explain the working principle of epicyclic gear train.
6. Derive velocity ratio of compound gear drive.
7. An open belt running over two pulleys 1.5m and 1.0m diameters connects two parallel shafts 4.8m apart. The initial tension in the belt when stationary is 3000N. If the smaller pulley is rotating at 600 rpm and coefficient of friction between belt and pulley is 0.3, determine the power transmitted taking centrifugal tension into account. The mass of belt is given as 0.6703kg/m length.
8. A power of 15KW is to be transmitted by a pulley of 90 cm diameter, rotating at 180 rpm. The angle of lap is 160 degree and the coefficient of friction is 0.25. If the safe pull per cm width of belt is 150 N. Calculate the width of belt.

**CHAPTER-4**

1. Give a comparison between governor and flywheel.
2. Describe working of porter governor with neat sketch.
3. With a neat sketch explain the working of Hartnell governor.
4. Write short notes on Watt governor
5. The mass of flywheel is 5 tonnes and the radius of gyration is 1.5 m. The fluctuation of energy is 50 KN-m. Find the maximum and minimum speed of the engine for a mean speed of 200 rpm.

**CHAPTER-5**

1. Differentiate between static and dynamic balancing.
2. Explain the principle of balancing of reciprocating masses.

**CHAPTER-6**

1. State the causes and remedies of vibration.
2. Write short notes on Torsional vibration.
3. Write short notes on longitudinal vibration.
4. Write short notes on Transverse vibration.