

QUESTION BANK

Unit Test :- II

Course :- TOM (22438)

Program :- Mechanical

Sem :- ME4i

Questions for 2 Marks

Chapter 04 (Belt, Chain and Gear drives)

(CO4)

- 1) List the methods to reduce the slip in belt and pulley.
- 2) Write down the formula of length of belt for open belt drive and cross belt drive.
- 3) Explain slip and creep in Belt Drive.
- 4) What are the advantages of 'V' belt drive over flat belt drive ?
- 5) Compare open belt and cross belt drive on the basis of (i) Velocity Ratio, (ii) Application, (iii) Direction of Driven Pulley, (iv) Length of Belt

Chapter 05 (Brakes and clutches)

(CO5)

- 1) Define self-energizing and self-locking brake
- 2) What are the limitations of shoe brake ?
- 3) Define uniform wear theory and uniform pressure theory
- 4) State the working principle of clutch
- 5) State functions of Brakes and clutch

Chapter 06 (Flywheels, Governors and balancing)

(CO6)

- 1) State effects of imbalance in machine.
- 2) Draw neat sketch of centrifugal Governor.
- 3) Define following terms : a) Fluctuation of energy, b) co-efficient of fluctuation of energy, c) co-efficient of fluctuation speed, & d) maximum fluctuation of energy.
- 4) Why balancing is necessary for high speed ?
- 5) Compare Flywheel and Governor.

Questions for 6 Marks

Chapter 04 (Belt, Chain and Gear drives)

(CO4)

- 1) Find the width of the belt, necessary to transmit 7.5 kW to a pulley 300 mm diameter, if the pulley makes 1600 rpm and the co-efficient of friction between the belt and pulley is 0.3. Assume the angle of contact as 180° and the maximum tension in the belt is not to exceed 8 N/mm width.
- 2) Give the classification of Gears and list the types of Gear train.
- 3) Explain with neat sketch the working of epicyclic gear train giving its applications
- 4) State the types of gear trains and explain any one giving its applications
- 5) Find the power transmitted by a belt running over a pulley of 600 mm diameter at 200 rpm. The co-efficient of friction between the belt and the pulley is 0.25, angle of lap is 160° and maximum tension in the belt is 2500 N.

Chapter 05 (Brakes and clutches)

(CO5)

- 1) Explain the working of internal expanding brake with neat sketch.
- 2) Explain the working of single plate clutch with neat diagram.
- 3) Explain working of centrifugal clutch with neat sketch
- 4) Difference between disc brake and internally expanding shoe brake
- 5) A simple band brake is operated by a lever 40 cm long. Brake drum diameter is 40 cm and brake band embraces 225° of its circumference. One end of band is attached to the fulcrum, while the other end is attached to a pin, 8 cm from fulcrum. The co-efficient of friction is 0.3. The effort applied at the end of lever is 400 N. Find braking torque applied, if it rotates anti- clockwise, when effort is applied upwards.
- 6) A shaft has number of collars integral with it. External diameter of collar is 400 mm and shaft diameter is 250 mm. If the intensity of pressure is 0.35 N/mm² (uniform) and co-efficient of friction is 0.05, estimate (i) power absorbed when the shaft runs at 105 rpm carrying a load of 150 kN (ii) Number of collars required.

Chapter 06 (Flywheels, Governors and balancing)

(CO6)

- 1) Explain function of flywheel with turning moment diagram for single slider 4 stroke IC engine.
- 2) Explain the working of centrifugal governor with neat sketch.
- 3) Four masses A, B, C and D are attached to a shaft and revolve in the same plane. The masses are 12 kg, 10 kg, 18 kg and 15 kg respectively and their radii of rotations are 40 mm, 50 mm, 60 mm and 30 mm. The angular position of the masses B, C and D are 60° , 135° and 270° from the mass 'A'. Find the magnitude and position of the balancing mass at a radius of 100 mm. Use graphical method only.