

- 6 a. Design a cone clutch to transmit a power of 40 kW at a rated speed of 750 rpm. Also determine
- Axial force necessary to transmit torque.
 - Axial force necessary to engage the cone clutch. (10 Marks)
- b. A single block brake with a torque capacity of 250 N-mt as shown in figure Fig. Q6 (b) below. The brake drum rotates at 100 rpm and the coefficient of friction is 0.35. Calculate
- Actuating force and hinge pin reaction.
 - Rate of heat generated during braking action.
 - The dimensions of the block if the intensity of pressure between the block and brake drum is 1 MPa. The length of the block is twice its width. (10 Marks)

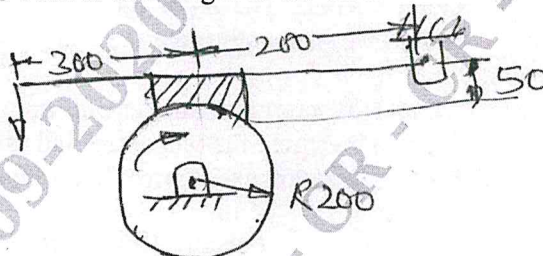


Fig. Q6 (b)

- 7 a. Derive Petroff's equation for a coefficient of friction of a lightly loaded journal bearing. (05 Marks)
- b. A 75 mm diameter full journal bearing supports a radial load of 3500 N. The bearing is 75 mm long and the shaft operates at 400 rpm. Assume a permissible minimum film thickness of 0.02 mm and normal running fit for the bearing bore. Using Raimodi and Boyd curves determine
- Absolute viscosity of the oil.
 - Coefficient of friction.
 - Heat generated.
 - Amount of oil pumped through bearing.
 - Amount of end leakage.
 - Temperature rise of the oil flowing through the bearing. (15 Marks)
- 8 Design a connecting rod for a petrol engine from the following data:
- Cylinder bore or diameter of the piston = 100 mm
 - Length of connecting rod = 350 mm
 - Maximum gas pressure or explosion pressure = 3 N/mm².
 - Length of stroke = 150 mm
 - Engine speed = 1500 rpm
 - Weight of reciprocating parts = 25 N
 - Compression ratio = 4 : 1
 - Assume any further data required for design. (20 Marks)
