# MGM’S College of Engineering, NANDED.

**Department of Mechanical Engineering**

**QUESTION BANK FOR TEST-** **I**

ACADEMIC YEAR 2013-14, SEM – II

Class: T.E. (Mech.) Subject: MD-II Date:15/02/2014

Duration : 01 Hr. Max. Marks: 20

Note : Each question carries 10 marks.

Q.1 (a) Enlist advantage and disadvantage of flexible drive over rigid drives.

(b) Explain with figure the constructions of Belts.

(c) Derive an expression for the length of open belt drive.

Q.2 Design a rubber belt to drive a dynamo generating 25 KW at 1440 rpm and fitted with a pulley 200 mm diameter. Assume dynamo efficiency to be 85%. The allowable stress for belt is 2.1 mpa. The density of rubber is 0.97 gm/cc angle of contact for pulley is 1650 and the Cof is 0.3. The thickness of the belt is 10 mm.

Q.3 The following data is given for a cross belt drive to transmit 7.5 KW.

Description Smaller pulley Bigger pulley

(1) Speed 1000 rpm 500 rpm

(2) COF 0.3 0.3

The belt, 6 mm thick and operates at a velocity of 13m/s approximately. The permissible tensile stress for the belt material is 1.75 N/mm2. The density of leather is 0.95 gm/cc. The centre distance between the two shaft is 1500 mm.

Calculate: (i) The diameters of pulleys (ii) the length and width of the belt (iii) the belt tensions.

Q.4 The following data is given for an open-type v-belt drive groove angle for sheaves= 340, mass of belt = 0.5 kg/m, maxi tension in belt = 700 N, The speed of smaller pulley = 1440 rpm, power transmission = 10 kw. The belt velocity approximately = 20 m/sec. Calculate: (i) diameters of pulley (ii) How many v-belts should be used.

Q.5 A multi-disk clutch consists of steel and bronze plates. It transmits 15 Kw power at 1440 rpm. The inner and outer diameters of contacting surfaces are 100 and 200 mm respectively, the Cof is 0.15 and permissible intensity of pressure is 0.5N/mm2. Assuming uniform wear theory, Calculate the number of steel and bronze disk.

Q.6 A leather faced cone clutch transmits power at 500 rpm. The semi-cone angle α is 12.50. The mean diameter of the clutch is 300 rpm, while the face width of the contacting surface of the friction lining is 100 mm. The Cof is 0.2 and the maximum intensity of pressure is limited to 0.07 N/mm2. Calculate the operating and power transmitting capacity of the cone clutch.

Q.7 A centrifugal clutch transmitting 18.5 kw at 720 rpm consists of four shoes. The clutch is to be engaged at 75% of the running speed. The inner radius of the drum is 165 mm, while the radius of the centre of gravity of each shoe, during engaged position is 140 rpm. The coefficient of friction is 0.25. Calculate the mass of each shoe.

Q.8 (a) Explain the friction materials used in clutch.

(b) Differentiate between the simple band brake and differential band brake.

(c) Explain the construction & working of the internal expanding shoe brakes.