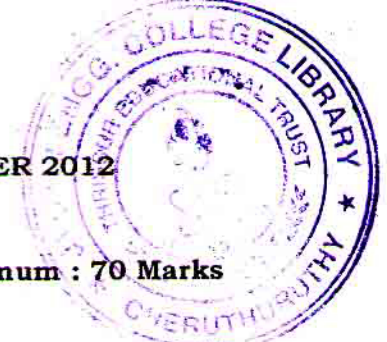


SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, OCTOBER 2012**ME/AM 09 701 - MACHINE DESIGN II****Time : Three Hours****Maximum : 70 Marks****PART - A**

- I. (a) What are the factors that has to be considered while designing a friction clutch.
 (b) Explain wedge film and squeeze film journal bearings.
 (c) Write a short note on gear drives giving their merits and demerits.
 (d) What is a herringbone gear? Where they are used?
 (e) What all things are taken into account while designing a forging?

(5 x 2 = 10 Marks)

PART - B

- II. (a) Discuss the different types of brakes giving atleast one application for each.
 (b) Deduce the equation for slip of a flat belt drive.
 (c) Explain the different types of roller bearing with neat figures?
 (d) Write the expression for static strength, limiting wear load and dynamic load for helical gears and explain the various terms used therein.
 (e) Sketch neatly the working drawing of bevel gears in mesh.
 (f) What are the assumptions made in design of welded joint?

(4 x 5 = 20 Marks)

PART - C

- III (a) A centrifugal clutch is to be designed 15 Kw at 900 r.p.m. The shoes are 4 in number. The speed at which the engagement begins is $\frac{3}{4}$ th of the running speed. The inside radius of the pulley run is 150mm. The shoes are lined with ferrodo for which the coefficient of friction may be taken as 0.23. Determine (1) Mass of shoes and (2) Size of shoes.

(Or)

- (b) Design a chain drive to run a blower at 600 r.p.m. The power to the blower is available from a 8 Kw motor at 1500 r.p.m. The center distance is to be kept at 800 mm.

- IV (a) Select a single row deep groove ball bearing for a radial load of 4000 N and an axial load of 5000 N, operating at a speed of 1600 r.p.m. for an average life of 5 years at 10 hours per day. Assume uniform and steady load.

(Or)

- (b) A 80 mm long journal bearing supports a load of 2800 N on a 50 mm diameter shaft. The bearing has a radial clearance of 0.05mm and the viscosity of oil is 0.021 kg/m-s at the operating temperature. If the bearing is capable of-dissipating 80 J/S, determine the maximum safe speed.

- V (a) A speed reducer unit is to be designed for an input of 1.1 Kw with a transmission ratio 27. The speed of the hardened steel worm is 1440 r.p.m. The worm wheel is to be made of phosphor bronze. The tooth form is to be 20° involute.

(Or)

- (b) The bronze spur pinion rotating at 600 r.p.m. drives a cast iron spur gear at a transmission ratio of 4:1. The allowable static stress for the bronze pinion and cast iron gear are 84 MPa and 105 MPa respectively. The pinion has 16 standard 20° full depth. Involute teeth of module 8mm. The face width of both the gears is 90mm. Find the power that can be transmitted from stand point of strength.

- VI (a) What principles of casting design must be observed in order to obtain sound casting? Explain.

(Or)

- (b) Explain the steps involved in the preparation of working drawing with complete specification and tolerances.

(4 x 10 = 40 Marks)