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Name.................................

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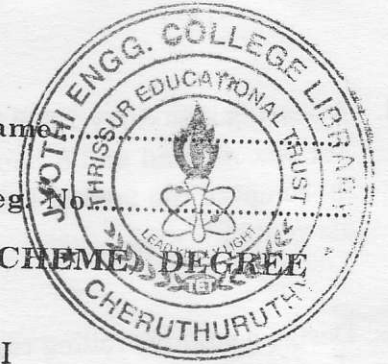
SEVENTH SEMESTER B.TECH. [ENGINEERING] (09 SCHEME) DEGREE EXAMINATION, NOVEMBER 2015

ME/PTME/AM 09 701—MACHINE DESIGN II

Time : Three Hours

Maximum : 70 Marks

Assume missing data wherever necessary.
Use of approved design data book is permitted for reference.

Part A

Answer all questions.

1. What are the functions of clutch and brake ?

2. What are the factors influencing selection of chain drives ?

3. Mention the most commonly used solid lubricants and its specialty.

4. What is skew gear ? Where do we use it ?

5. Mention some commonly used rolled section.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

6. Compare the merits and demerits of chain drive over belt drive.

7. Describe the principle of hydrostatic lubrication.

8. Why should be the temperature raise kept within permissible range in brakes.

9. Discuss the classifications in bevel gear ?

10. What are the essential requirements of good lubricants ?

11. State the design recommendations for forgings.

(4 × 5 = 20 marks)

Part C

12. Design a chain drive to transmit 3 kW from motor to compressor. The motor speed is 960 r.p.m. and the compressor speed is around 240 r.p.m. The drive is horizontal and is to work for 16 hours/day.

Or

13. Design a single plate clutch having both sides effective for the data given below :

Power to be transmitted = 10 kW ; Speed of the shaft = 1200 r.p.m.

Allowable lining pressure = 0.1 MN/m^2 ; Co-efficient of friction = 0.25.

Allowable shear stress for the shaft = 50 MN/m^2.

Turn over

14. A bearing is to carry 7,000 N radial load and 4,000 N thrust load. The shaft rotates at 1500 r.p.m. For smooth load and 8 hours per day service for 5 years (a) select a deep groove ball bearing ; (b) compute the 90% of the life bearing and the probability of the selected bearing serving the above life.

Or

15. Design a suitable rolling contact bearing for a 120 mm diameter shaft running at 1500 r.p.m. The shaft carries a radial load of 6 KN and an axial thrust of 4 kN. Desired life is 20,000 hours.

16. Design a pair of spur gear to transmit a power of 15 kW at 760 r.p.m. The gear is to work for at least 12,000 hours. The speed of output gear is 150 r.p.m. The gear and pinion materials are to be suggested by the designer.

Or

17. A worm gear drive is to transmit 2 kW at 1,000 r.p.m. Speed ratio is 30. Use steel worm and C.I. wheel. Design the drive.

18. Discuss the design recommendations for castings and welded products.

Or

19. Describe the preparation of working drawings for a product in your choice.

(4 × 10 = 40 marks)