Roll No.

24355

B. Tech. 6th Semester (ME)

Examination – May, 2016

MECHANICAL MACHINE DESIGN - II

Paper: ME-304-F

Time : Three Hours]

[Maximum Marks: 100

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note: Question No. 1 is compulsory and attempt one question from each Section.

1. Explain the role of processing in design; discuss surging phenomenon in springs; How will you select material for gears, explain?

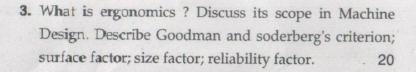
SECTION - A

2. Explain various types of fluctuating stresses; Describe stress concentration factor; fatigue failure; endurance limit; Notch sensitivity.

24355-9,550-(P-3)(Q-9) (16)

P. T. O.





SECTION - B

- **4.** A solid circular shaft is subjected to a bending moment of 3000 N-M and a forque of 10,000 N-M. The shaft is made of 45C8 steel having ultimate tensile stress of 700 MPa and a ultimate shear stress of 500MPa. Assume F. O. S = 6 find the diameter of shaft.
- 5. Explain the following for a shaft:
 - (a) Torsional rigidity.
 - (b) Flexural rigidity.
 - (c) Equivalent bending moment.
 - (d) Equivalent twisting moment and also describe how a ball bearing is located on a shaft. 20

SECTION - C

6. Explain bearing construction. Explain types of bearing constructions; explain the term viscosity; what is the effect of temperature rise on viscosity? Describe Pivot and collar bearing.

24355-9,550-(P-3)(Q-9) (16) (2)

7. A 80mm long Journal bearing supports a load of 2800 N on a 50mm diameter shaft. The bearing has a radial clearance of 0.05mm and the viscosity of the oil is 0.021 kg/m – s at the operating temperature. If the bearing is capable of dissipating 80 J/S. Determine the max. Safe speed.

SECTION - D

- **8.** Describe the terminology of bevel gears and what is the basic difference between velocity factor for a bevel gear teeth cut on milling machine and bevel gear teeth generated on a machine?
- 9. Types of worm gears; Terms used in worm gearing; properties for worm gear and efficiency of worm gearing; strength of worm gear teeth; thermal rating of worm gearing.
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