Roll No. .....

24355

B. Tech. 6th Semester (ME)
(Reappear) Examination – October, 2020

MECHANICAL MACHINE DESIGN-II

Paper : ME-304-F

Time : 1.45 Hours] *[Maximum Marks : 100*

Before answering the questions, 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 : Attempt any ***three*** questions. All questions carry equal marks.

1. (a) Explain the role of value engineering in design.

(b) Discuss the various types of lubrications.

(c) How will you classify the Gears ?

(d) Explain the spring and their types.

2. Explain the different types of factors considered for variable stress.

3. Drive the relation for combined variable stress by using the Goodman method.

4. A pair of wheels of a railway wagon carries a load of 50 kN on each axle box, acting at a distance of 100 mm outside the wheel base. The gauge of the rails is 1.4 m. Find the diameter of the axle between the wheels, if the stress is not to exceed 100 N/mm^2.

5. A compression coil spring made of an alloy steel is having the following specification :

   Mean diameter of the coil = 50 mm

   Wire diameter = 5 mm

   Number of active coils = 20

   If the spring is subjected to an axial load of 500 N, calculate the maximum shear stress (neglecting the curvature effect) to which the spring material is subjected.

6. A journal bearing 60 mm in diameter and 90 mm long runs at 450 r.p.m. The oil used for hydrodynamic lubrication has absolute viscosity of 0.06 kg/m-s. If the diametral clearance is 0.1 mm, find the safe load on the bearing.

7. Discuss the procedure for designing of the journal bearing by using Boyd's chart.

8. Explain the terminology of spur gears in detail.

9. Explain the design procedure for spur gears.
