Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No.....

MMPD-102

M.E./M.Tech. I Semester

Examination, December 2017

Advanced Machine Design

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.
ii) All questions carry equal marks.
iii) Use of design data book permitted inside exam hall.

1. Write down theory of failures and discuss Von mises theory based strength design.

2. Discuss followings:
   a) Surface fatigue design failure.
   b) Surface fatigue design of rolling contact bearings.

3. a) How combined creep and fatigue failure is prevented?
   b) How lubrication system is selected for a bearing?

4. Design a worin gear drive to transmit 3kW at 600 rpm, speed of worm wheel is 40rpm. Tabulate the results neatly.

5. A lift system is provided with cushion springs at the bottom of lift. The lift is free to fall springs are set in parallel specify the required number of springs if the lift has free fall of 1.5m from rest. Weight of lift = 30kN, allowable deflection per spring = 370mm, number of active turns = 15. Spring mean coil diameter = 160mm, spring wire diameter = 30 mm, modulus of rigidity for spring = 80 GPa.

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6. a) Explain hydrogen embrittlement.
   b) What is dynamic design of machine elements?

7. How high speed cams are designed write down the step by step process of designing cams?

8. Write short notes on followings:
   a) Kloomok and Muffley analytical function of cycloid.
   b) Freudenstein's Equation
   c) Design of non circular spur gears
   d) Design for corrosion

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