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

Roll No .....

AU/ME-4005 (CBGS)

B.E. IV Semester

Examination, May 2018

Choice Based Grading System (CBGS)

Machine Design

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) State the causes of Stress Concentration in brief. 7
   b) Define the terms: rgpvonline.com 7
   i) Notch Sensitivity ii) Cyclic Loading

OR

   a) Write and explain the general consideration in Machine Design. 7
   b) What do you understand by stress concentration? 7

2. a) Explain S-N Curve. 5
   b) Soderberg Equation. 5
   c) Goodman and Modified Good man's diagram. 4

3. a) State about various types of Springs. 5
   b) Define Spring Buckling. 5
   c) Explain in brief about fatigue loading of springs. 4

4. a) Write Reynolds Equation for Journal bearing. State its significance. 5
   b) State brief about selection of ball and roller bearing. 5
   c) Explain briefly about boundary lubrication in Journal bearing. 4

OR

Design the journal bearing for a centrifugal pump from the following data:
Load on the Journal = 10 KN
Speed on the Journal = 900 rpm
Ambient Temperature = 150° C.

5. a) What are the various permanent and detachable fastenings? Give a complete list with the different types of each category. 7
   b) Sketch and discuss the various types of welded joints used in pressure vessels. What are the considerations involved? rgpvonline.com 7

6. a) Define Fasteners and Classify types of Fasteners. 5
   b) Explain about Permanent Fasteners and Temporary Fasteners? 5
   c) What are the types of Cotter Joints? 4

OR

Design a double riveted lap joint for MS Plates having a thickness 9.5 mm. Calculate the efficiency of the joint. The permissible stresses are: σt = 90 MPa, τs = 75 MPa, σc = 150 MPa. 14

7. a) Define Spring and objectives of a Spring? 7
   b) Explain the difference between Helical compression and tension spring? 7

OR

A helical spring of wire diameter 6 mm and spring index 6 is acted by an initial load of 800 N. After compressing it further by 10 mm the stress in the wire is 500 MPa. Find the number of active coils. G = 84000 MPa. 14

8. a) Explain about Static and dynamic load capacities? 7
   b) What are the types of ball bearings and roller bearings? 7

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