B. Tech. (AUE) 4th Semester (F-Scheme) Examination, May–2015

DESIGN OF MACHINE ELEMENTS

Paper–AUE-210-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question one is compulsory.*** *Attempt at least* ***one*** *question from each section.*

1. Write short notes on following :
   (i) What is the critical speed of shaft ?
   (ii) What is fit and clearance ?
   (iii) What is surging of spring ?
   (iv) Discuss about *HSS.* 20

Section–A

2. Discuss the design consideration for casting in detail. 20

3. Discuss distortion energy theory for simple stresses in machine parts. 20

Section–B

4. Discuss creep and its curve for materials in detail. 20

5. The hub shrunk on a shaft is 50H7-S6. However, it is necessary to limit the interference from 0.030 to 0.050 mm between the hub and the shaft. Specify the groups for selective assembly. 20

Section–C

6. Design a double riveted joint with two cover plates for the longitudinal seam of a boiler shell, 0.75m diameter to carry a max. Steam pressure of 1.85 N/mm^2. The allowable stresses are ft = 35.0N/mm^2 fs = 28.0 N/mm^2. Assume the efficiency of joint 75%. 20

7. Discuss the design procedure for cotter joint in detail. 20

Section–D

8. How many cotton ropes 32mm diameter will be required to transmit 375 km/over pulleys 12m apart at a speed of 30m/s. 20

9. Discuss the design procedure for leaf spring in Automobile. 20