Code: 9D15104

M.Tech I Semester Supplementary Examinations February/March 2018
FRACTURE, FATIGUE & CREEP DEFORMATION
(Machine Design)
(For students admitted in 2012, 2013, 2014, 2015 & 2016 only)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks
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1   Explain the fracture behavior of ductile and brittle materials at elevated temperatures.

2   Derive the expression for energy release rate G at load control and at displacement control.

3   Write short notes on:
   (a) Stress concentration factor of crack tip.
   (b) Stress intensity factor of material.

4   Discuss about plastic zone size through the Dugdale approach.

5   Why is the Ramberg-Osgood relation convenient for determining the J-integral for elastic-plastic material?

6   Define fracture. Discuss about the cleavage type of fracture failure in ductile material.

7   Write short notes on:
   (a) Goodman's rule and Miners rules.
   (b) Mean stress R ratio.
   (c) Strain and load controls of fatigue.

8   What do you mean by creep? Explain the micro mechanism of creep in materials.

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