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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

- 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 elasticplastic material?
- Define fracture. Discuss about the cleavage type of fracture failure in ductile material. 6 anker.co
- 7 Write short notes on:
 - (a) Goodman's rule and Miners rules.
 - (b) Mean stress R ratio.
 - (c) Strain and load controls of fatigue

March!

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