

Roll No. ....

**22241**

**M. Tech. 3rd Semester  
Mechanical Engg. (Machine  
Design) Examination-  
December, 2016**

**MECHANICAL BEHAVIOUR OF MATERIALS**

**Paper : M-821-A**

**Time : 3 hours**

**Max. Marks : 100**

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Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

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**Note:** All questions carry equal marks. Attempt any **five** questions.

1. What is deformation by slip and twin formation ? Explain the slip in a perfect lattice. (20)

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(1)

[ Turn Over

2. Explain the effect of strain rate and temperature on tensile properties of material. (20)

3. (a) Discuss the effect of gauge length on strength of material. (10)

(b) What is necking in tension ? How is necking formed in a work piece of mild steel ? (10)

4. What is fatigue curve ? Explain the use of same in the selection of material. Also explain the various factors affecting fatigue. (20)

5. (a) Show creep strain and creep time curves with detailed discussion. (10)

(b) Explain fracture by creep at elevated temperatures. (10)

6. Briefly explain two impact tests and show its results. (20)

7. Explain the concept of Flow and Fracture under rapid loading and Temper and Hydrogen embrittlement. (20)

8. Write short notes on : (20)

(a) Effect of gauge length on strength and elongation

(b) Yield point phenomenon

(c) Dislocation climb and jog