

**23376**

**M.Tech Ist Sem. Civil Engg.  
(Specialization in Structural Engg.)**

**Examination-May, 2015**

**Material Technology**

**Paper-CE-601/MTSD-101**

**Time : 3 hours**

**Max. Marks : 100**

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.

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

1. (a) Enlist the major compounds of ordinary Portland cement & briefly describe its importance. [10]
- (b) What are different types of cement ? Discuss the properties & applications of

two ordinary Portland cement based cement for concrete construction. [10]

2. (a) What does strength in concrete mean ? Why is compressive strength usually considered being most important in concrete design ? [10]
- (b) Discuss the various aspects of durability of concrete. What measures are suggested by IS 456 : 2000 to ensure durable structure ? [10]
3. Write short notes on any **two** of the following : [20]
  - (a) Thermal properties of concrete
  - (b) Shrinkage & creep of concrete
  - (c) Chemical attack of concrete
4. (a) List eight basic steps of ACI method of concrete mix design. State the limitations of this method. [10]
- (b) Explain the factors affecting properties of fibre reinforced concrete. [10]

5. With the help of stress curve, explain the behaviour of steel under tension. [20]

6. What do you mean by fatigue ? Why is it caused ? Discuss the factors affecting fatigue properties. <http://www.HaryanaPapers.com>[20]

7. What is crystal imperfection ? Classify them in order of their geometry. What is a Burger's Vector ? Where & why this is used ? [20]

8. Write short notes on any two of the following : [20]

(a) Theory of dislocation

(b) Structure of material & their imperfection

(c) Mechanics of creep in tension

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