

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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