

B.Tech III Year I Semester (R13) Regular Examinations December 2015

**CONCRETE TECHNOLOGY**

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What do you mean by graded aggregate?
  - (b) What is meant by 53 grade cement?
  - (c) How can workability of concrete be improved?
  - (d) How does water cement ratio affect the strength of concrete?
  - (e) State the different methods of concrete mix design.
  - (f) List the types of fibres used in fibre concrete.
  - (g) Define creep of concrete.
  - (h) List the benefits of high performance concrete.
  - (i) State four methods of curing.
  - (j) What is meant by extreme weather concreting?

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Explain the process of hydration of cement.  
(b) Explain the Initial setting time of cement with neat sketches.

**OR**

- 3 (a) Explain the alkali aggregate reaction of aggregates.  
(b) List the deleterious substance in aggregates and explain their influence on concrete.

**UNIT – II**

- 4 (a) Explain the factor effecting g the workability of concrete.  
(b) Explain the flow table test on fresh concrete.

**OR**

- 5 (a) Briefly explain the steps in the manufacturing of concrete.  
(b) Explain the flexural strength of concrete with neat sketches.

**UNIT – III**

- 6 (a) Describe the properties of polymer concrete.  
(b) Explain the factors affecting the properties of fibre reinforced concrete.

**OR**

- 7 (a) Explain the self healing concrete.  
(b) Explain the High-performance concrete.

**UNIT – IV**

- 8 (a) Explain the factors affecting the creep of concrete.  
(b) Explain the method of Ultra sonic velocity method used for concrete elements.

**OR**

- 9 (a) Discuss the codal provisions for Non-destructive testing of concrete structures.  
(b) Explain the method of Rebound hammer with limitations.

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**UNIT – V**

- 10 (a) Explain the factors influence the choice of mix proportions.  
(b) Explain the various steps in ACI method of concrete mix design.

**OR**

- 11 Design M25 grade concrete using IS 10262 method of mix design for the following data:  
(i) Size and shape of aggregate : 20 mm angular  
(ii) Exposure condition: severe  
(iii) Minimum cement content: 320 kg/m<sup>3</sup>  
(iv) Maximum free water cement ratio: 0.55  
(v) Degree of supervision: good  
(vi) Maximum cement content : 450 kg/m<sup>3</sup>  
(vii) Specific gravity of cement: 3.15, fine aggregate: 2.7, coarse aggregate: 2.74  
(viii) Water absorption:  
Coarse aggregate: 1.0%, fine aggregate: 1.5%  
(ix) Fine aggregate conforming to zone II

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