Code: 13A01503

R13

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)

*****

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.

Contd. in page 2

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^3

(iv) Maximum free water cement ratio: 0.55

(v) Degree of supervision: good

(vi) Maximum cement content : 450 kg/m^3

(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

*****