

R09**Code: 9A01502**

B.Tech III Year I Semester (R09) Supplementary Examinations December 2015

CONCRETE TECHNOLOGY

(Civil Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Enumerate the different types of cements.
(b) Explain the properties of following cements:
(i) Rapid hardening cement.
(ii) Quick setting cement.
(iii) Sulphate resisting cement.
- 2 (a) What is the meaning of surface texture of the aggregate? Explain in detail how the surface texture influences the properties of concrete.
(b) What are the different methods of measuring the surface texture of aggregates?
- 3 (a) Discuss the difference between weigh batching and volume batching in the preparation of fresh concrete.
(b) Explain the various methods of mixing of concrete.
- 4 (a) Explain the Maturity concept of concrete.
(b) The strength of a sample of fully matured concrete is found to be 45 MPa. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during day time at 20°C, and night time at 10°C. The Plowman's constants may be assumed as 32 and 54.
- 5 (a) Explain the ultrasonic method of testing of the hardened concrete.
(b) Explain the difference between three point loading method and centre point loading method for testing concrete beams.
- 6 Discuss in detail about the four different types of shrinkages.
- 7 Design a concrete mix of M25 grade for a roof slab. Take a standard deviation of 4 MPa. The specific gravities of coarse aggregate and fine aggregate are 2.63 and 2.68 respectively. The bulk density of coarse aggregate is 1610 kg/m³ and fineness modulus of fine aggregate is 2.72. A slump of 60 mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using ACI method. Assume any missing data suitably.
- 8 (a) What is foamed slag? How is it useful in the production of light weight aggregate concrete?
(b) Explain the term sintered fly ash. How this material can be used in the production of light weight concrete?
