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INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

Four Year B.Tech V Semester End Examinations (Regular) - November, 2018

Regulation: IARE – R16

CONCRETE TECHNOLOGY

Time: 3 Hours

(CE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) What is hydration? Explain briefly the role played by gypsum in the hydration reaction of cement. [7M]
- (b) If 30kg of coarse aggregate is sieved through 80mm, 40mm, 20mm, 10mm, 4.75mm, 2.36mm, 1.18mm, 600 micron, 300 micron and 150 micron standard sieves and the weights retained are 1kg, 5kg, 12kg, 7kg, 5kg respectively. What is the fineness modulus of the aggregate? [7M]
2. (a) Explain in detail the different tests on fine and coarse aggregate. [7M]
- (b) If 25kg of coarse aggregate is sieved through 80mm, 40mm, 20mm, 10mm, 4.75mm, 2.36mm, 1.18mm, 600 micron, 300 micron and 150 micron standard sieves and the weights retained are 1kg, 4kg, 9kg, 6kg, 5kg respectively. What is the fineness modulus of the aggregate? [7M]

UNIT – II

3. (a) What is bleeding? Write the significance of bleeding in construction which proceeds in several lifts? [7M]
- (b) Discuss the various factors which affect the workability of concrete? [7M]
4. (a) How does the relation between the modulus of elasticity of concrete and strength vary with age. [7M]
- (b) Explain any two workability tests adopted for testing of fresh concrete with neat sketches. [7M]

UNIT – III

5. (a) Distinguish between Ultrasonic pulse velocity test and Rebound hammer test. [7M]
- (b) Explain shrinkage and its effect on concrete. [7M]
6. (a) Compare the difference between Semi-destructive and non-destructive testing methods [7M]
- (b) How do you determine the splitting strength of concrete. [7M]

UNIT – IV

7. (a) What is meant by concrete mix design? Write the steps involved in the method of mix design? [7M]
- (b) Discuss in detail about the statistical quality control of concrete. [7M]

8. (a) Explain the durability and statistical quality control of concrete in detail. [7M]
(b) Design the concrete mix for the following data: characteristic compressive strength =30 MPa, maximum size of aggregate= 20mm, minimum cement content:350kg/m³, maximum water cement ratio : 0.5, workability : 125 - 150mm (slump), exposure condition : moderate, degree of supervision : good, type of aggregate: crushed angular aggregate, maximum cement content: 450kg/m³. Assume any suitable missing data. [7M]

UNIT – V

9. (a) Explain in detail high performance concrete. [7M]
(b) List out the factors affecting properties of fibre reinforced concrete. Explain in detail. [7M]
10. (a) Compare the important properties of normal concrete with those of polymer concrete. [7M]
(b) List out the environmental benefits of using recycled concrete. [7M]

