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Question Paper Code: BST205



INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

MODEL QUESTION PAPER – II

M.Tech I Semester Regular Examinations, February – 2017

Regulation: R16

ADVANCED CONCRETE TECHNOLOGY (Structural Engineering)

Time: 3 Hours

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

- (a) Explain the effect of admixtures on hydrations. List the advantages and disadvantages of special purpose cements. [7M]

(b) Describe the alkali aggregate reaction. State the factors promoting and control of alkali aggregate reaction. [7M]
- (a) List out the different types of admixtures. Classify the aggregates according to the shape and based on the unit weight of aggregates. [7M]

(b) Write about light weight aggregates. Mention any six naturally occurring and any six artificially occurring light weight aggregates. [7M]

UNIT – II

- (a) Describe in detail about the manufacturing process of concrete, bleeding and segregation of concrete. [7M]

(b) Write about the various factors affecting permeability of concrete. What does the term consistency and setting time imply? [7M]
- (a) What is the differences between non-destructive and semi destructive methods? Explain with the help of neat diagrams. [7M]

(b) List any five factors affecting the workability of concrete. Explain how size and shape of aggregates affect the workability of concrete [7M]

UNIT – III

- (a) Distinguish between high strength concrete and high performance concrete. Write in detail about the J-Ring test and V-Funnel time test. [7M]

(b) Explain the special methods for making high strength concrete. What are the special characteristics of light-weight foamed concrete? [7M]
- (a) illustrate the techniques for producing the ultra-high strength concrete. What are the applications of high performance concrete? [7M]

(b) List out the various advantages of using flyash in concrete? Discuss the influence of utilization of wastes in concrete in India. [7M]

UNIT – IV

7. (a) Describe any two test procedures conducted for self-compacting concrete. Describe the different types of surface defects encountered in SCC. [7M]
- (b) Define fiber reinforced concrete composite. Enlist different naturally occurring fibers. In what way can the behavior of FRC be used in seismic resistant design? [7M]
8. (a) Explain the properties and applications of light weight concrete. What are the properties of polymer impregnated concrete? [8M]
- (b) Discuss in detail the different techniques for measurement of toughness for FRC. How sampling of concrete should be done for quality control tests? [6M]

UNIT – V

9. (a) Describe the procedure in adopting the ACI method of concrete mix design. Explain how the modulus of elasticity of concrete can be determined experimentally. [6M]
- (b) Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement. [8M]
10. (a) Design the concrete mix for the following data: [8M]
Characteristic compressive strength=35MPa
Maximum size of aggregate=20mm (angular)
Degree of workability = 0.9 CF
Degree of quality control=good and
Type of exposure =severe
Water absorption by CA= 1%
Moisture content in FA = 1.5 %
Assume any suitable missing data.
- (b) Write any one procedure for determining concrete mix design. What are the factors which influence the choice of mix proportions? [6M]