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Total Number of Pages : 02

B.Tech  
PCI3D001

3<sup>rd</sup> Semester Regular Examination 2018-19

CONCRETE TECHNOLOGY

BRANCH : CIVIL

Time : 3 Hours

Max Marks : 100

Q.CODE : E965

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10)

(2 x 10)

- Mention the test adopted to test the properties of cement in laboratories?
- Define initial and final setting time of cement.
- Name any two types of mineral admixtures.
- Define compacting factor.
- What are the ways of water curing?
- List out different tests in NDT.
- Define high performance concrete.
- Define Dynamic modulus of Elasticity.
- What are the factors affecting the choice of mix proportions.
- What are the different ways of achieving light weight concrete ?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)

(6 x 8)

- Explain heat of hydration and hydration process of cement in detail.
- Write explanatory notes on :
  - uniform grading
  - gap grading
  - well grading.
- What is meant by "bulking of sand"? Explain how it is affected by moisture content.
- Explain the terms 'Segregation' and 'Bleeding' with reference to the properties of fresh concrete.
- Describe the importance of curing? When should it be commenced? For how long should it be continued?
- Explain the various factors affecting strength of hardened concrete.
- Explain the relation between compression strength and tensile strength of concrete.
- Explain Creep of concrete and relation between creep and time.
- Explain Schmidt's Rebound Hammer test and the limitations and applications of the same.
- What is meant by statistical quality control? What are the common terminologies used in the statistical quality control?
- Write applications of Fibre Reinforced concrete?
- Explain properties of polymer concrete?

**Part-III**

**Long Answer Type Questions (Answer Any Two out of Four)**

**Q3** What do you understand by the term “Workability”? Explain any two methods to measure workability of concrete? **(16)**

**Q4** What are the compounds formed during hydration of cement? Briefly explain the hydration reactions of cement compounds. **(16)**

**Q5** What are the factors that affect the creep and shrinkage of concrete? How does strength of concrete influence the modulus of elasticity and Poisson’s ratio of concrete? **(16)**

**Q6** Design a concrete mix for M<sub>20</sub> concrete for the following data by BSI method. **(16)**

- Specific gravity of ordinary Portland cement = 3.15
- Specific gravity of fine aggregate = 2.65
- Specific gravity of coarse aggregate = 2.70
- Standard deviation = 4 N/mm<sup>2</sup>
- bulk density of CA=1600kg/m<sup>3</sup>
- Fineness modulus = 2.80
- Slump = 50mm
- Assume any other data suitably, if necessary