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**Eighth Semester B.E. Degree Examination, June/July 2019**  
**Advanced Concrete Technology**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting  
atleast TWO questions from each part.  
2. Use of IS 10262-2009 is permitted.**

**PART - A**

- 1 a. Enumerate the importance of Bogue's compounds in ordinary Portland cement. (08 Marks)  
b. Explain in brief, the factors affecting the strength and elasticity of concrete. (06 Marks)  
c. Explain the Rheology of concrete in terms of Bingham's parameters. (06 Marks)
- 2 a. Explain with a sketch the mechanism of deflocculation of cement particles when plasticizer is used in making concrete. (08 Marks)  
b. Explain the procedure adopted to determine the optimum dosage of superplasticizer. (06 Marks)  
c. What is the effect of fly ash on the fresh and hardened properties of concrete? (06 Marks)
- 3 Using BIS 10262-2009, design a concrete mix of M25 grade. Given  
(i) Minimum cement content : 300 kg/m<sup>3</sup>  
(ii) Maximum cement content : 450 kg/m<sup>3</sup>  
(iii) Maximum water/cement ratio : 0.5  
(iv) Exposure condition : Moderate  
(v) Workability : 100 mm slump  
(vi) Admixture : Superplasticizer of G = 1.12  
(vii) Quality control : Good  
(viii) Assume any missing data required. (20 Marks)
- 4 a. Describe chlorine induced corrosion of steel in concrete. (08 Marks)  
b. Explain Alkali-Aggregate reaction. (06 Marks)  
c. List the factors affecting the Durability of concrete. (06 Marks)

**PART - B**

- 5 a. Mention the need, properties and applications of self-compacting concrete. (08 Marks)  
b. What are the advantages of Ready Mix concrete? (06 Marks)  
c. Explain under water concreting. (06 Marks)
- 6 a. List the different types of fibers. Explain any one type of fiber used in concrete. (08 Marks)  
b. List and explain the various applications of Ferro-Cement. (06 Marks)  
c. Explain the behaviour of Fiber Reinforced Concrete in compression and Tension. (06 Marks)
- 7 a. Explain High Density Concrete. (08 Marks)  
b. Explain Light-Weight Concrete. (06 Marks)  
c. What is High performance concrete? What are the properties of high performance concrete? (06 Marks)
- 8 a. List the non-destructive tests on hardened concrete. Why is it required? (08 Marks)  
b. Explain with neat sketch Pulse Velocity test. (06 Marks)  
c. Explain with neat sketch Rebound Hammer test. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.