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10CV81

**Eighth Semester B.E. Degree Examination, Feb./Mar. 2022**  
**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 IS 10262 – 2009 is permitted.

**PART – A**

- 1 a. Discuss the physical and chemical characteristics of C-S-H, Calcium Hydroxide in a well Hydrated port land cement paste. (10 Marks)  
b. Draw a typical stress – strain of concrete. How would you determine different types of Static Elastic moduli and Dynamic Elastic moduli. (10 Marks)
- 2 a. Discuss why the use of Superplasticisers and Pozzolamic admixtures is essential for producing special concretes. (10 Marks)  
b. Explain in brief with respect to properties and Applications of Admixtures : (10 Marks)  
i) GGBS ii) Silica Fume.
- 3 Design a concrete mix of M40 grade for the following data : (20 Marks)  
Type of cement OPC 53 grade.  
Type of MA – Flyash  
Maximum size of CA = 20mm and 12.5mm  
Minimum cement content : 320 kg/m<sup>3</sup>  
Maximum water-cement ratio : 0.40  
Workability : 100mm (Slump)  
Exposure conditions : Severe (RCC)  
Degree of supervision : Good  
Chemical Admixture : HRWR.  
Sp gr Cement = 3.15  
Sp gr Flyash = 2.2  
Sp gr CA = 2.70  
Sp gr FA = 2.60.  
Water absorption – NIL  
Free moisture – NIL  
FA = Zone II (As per Sieve Analysis)  
Assume any other missing data suitably.
- 4 a. Explain in brief with flow chart physical causes of deterioration of concrete. (10 Marks)  
b. What chemical reactions are generally involved in Sulphate Attacks on concrete and methods of controlling Sulphate Attacks? (10 Marks)

**PART – B**

- 5 a. Discuss RMC concrete With respect to production, transportation and placing of concrete. (10 Marks)  
b. Write short note on : (10 Marks)  
i) Under water concreting.  
ii) High volume Flyash concrete (merits and demerits)

- 6 a. Name different types of Fibers and its applications and also factors affecting properties of FRC. (10 Marks)  
b. Discuss "Ferro Cement" with respect to properties, advantages and applications. (10 Marks)
- 7 a. What is the principle advantage of Light Weight concrete and how concrete acquires this property? (05 Marks)  
b. List out Natural and Artificial type of Light Weight aggregates. (05 Marks)  
c. Explain in brief High performance concrete with respect to properties, material required for HPC and Applications HPC. (10 Marks)
- 8 a. Explain with neat sketch Flexural testing of concrete beam as per IS codes of practice. (10 Marks)  
b. Write a note on NDTs concepts :  
i) Rebound Hammer (RH). (05 Marks)  
ii) Ultrasonic Pulse Velocity (UPV). (05 Marks)

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