

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SECOND SEMESTER M.TECH DEGREE EXAMINATION, MAY 2016**

**Civil Engineering**

**Structural Engineering and Construction Management**

**04CE6418—Advanced Concrete Technology**

Max. Marks: 60

Duration: 3 Hours

**PART A**

*Answer All Questions*

*Each question carries 3 marks*

1. Explain the grading of aggregate?
2. Explain the importance quality of water for concrete preparation.
3. List the factors affecting creep and shrinkage of concrete. Briefly explain each of them in two or three sentences.
4. List the factors affecting corrosion? Briefly explain each of them in two or three sentences.
5. Briefly explain the importance of weathering of the concrete.
6. List the different methods of curing. Briefly explain each of them in two or three sentences.
7. List any two applications of epoxy resins in concrete production. Briefly explain each of them in two or three sentences.
8. Explain briefly about fibre reinforced concrete.

**PART B**

*Each question carries 6 marks*

9. Briefly explains the hydration reaction of Bogue's compounds indicating the products of hydration

OR

10. Explain the classification of aggregate. Mention different tests for aggregates.
11. Describe the mechanism of action of plasticizers with neat sketch. Mention any three Super plasticizers

OR

12. Explain the following types of cement highlighting how it is different from ordinary Portland cement in composition, properties and uses:-

- (i) Low Heat Cement (ii) Sulphate Resisting Cement (iii) High Alumina Cement  
(iv) Air Entraining Cement (v) Hydrophobic Cement

13. What is Mix Design? Explain the various factors governing the selection of mix proportion.

OR

14. Discuss the step by step procedure for mix design of high performance concrete recommended by ACI committee
15. Discuss the different Non-Destructing Tests on hardened concrete

OR

16. What are the various types of chemical attacks encountered by concrete? Briefly explain each of them in four or five sentences
17. Explain vacuum dewatering of concrete. Explain different processes involved in shotcrete

OR

18. Explain the various methods of transportation of concrete.
19. Discuss the manufacture; properties and applications of polymer concrete

OR

20. Discuss the emerging trends in replacement of fine aggregates