

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech S8 (Hons) Exam May 2020

04 CE 6116—Microstructure & Innovations in Structural Concrete**Max. Marks : 60****Duration: 3 Hours****PART A***Answer All Questions**Each question carries 3 marks*

1. List the principal solids in hydrated cement paste which can be resolved under an electron microscope.
2. Explain the structure of aggregate phase in concrete.
3. Define terms Thixotropy, Viscosity modifying admixture and Robustness related with SCC.
4. List the advantages of SCC over normal concrete.
5. Write a short note on fire resistance of self- compacting concrete.
6. Explain unstressed residual strength test.
7. Explain coefficient of thermal expansion.
8. Write a short note on paste carbonation in concrete.

PART B*Each question carries 6 marks*

9. What are the different types of voids seen in the microstructure of concrete? Explain in detail.

OR

10. When a saturated cement paste is dried, the loss of water is not directly proportional to the drying shrinkage. Why?
11. List out the different test methods for workability properties of SCC.

OR

12. Explain the detailed procedure for mix design of SCC.
13. Write detailed notes on Creep, Shrinkage and Coefficient of thermal expansion of SCC.

OR

14. Explain consistence classification for Slump flow, Viscosity, Passing ability and Segregation resistance of self- compacting concrete.
15. Explain effect of temperature on modulus of elasticity and poisson's ratio.

OR

16. Write a detailed note on test methods to determine the effect of temperature on concrete.

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17. Explain the influence of aggregate type on concrete at elevated temperature.

OR

18. Write a detailed note on Slag as a supplementary cementitious material.

19. Discuss on the basic microstructure of concrete by SEM.

OR

20. Write a detailed note of different methods of thermal analysis of concrete.

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