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**Question Paper Code : 50536**

**B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.**

**Fourth Semester**

**Civil Engineering**

**CE 3403 — CONCRETE TECHNOLOGY**

**(Regulations 2021)**

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**Time : Three hours**

**Maximum : 100 marks**

**(Note : IS : 10262, IS : 456 can be permitted. Assume suitable data if necessary)**

**Answer ALL questions.**

**PART A — (10 × 2 = 20 marks)**

1. Write the hydration reaction of tricalcium silicate.
2. Define standard consistency of cement paste as per IS 4031.
3. Write the basic difference in mechanism of action of water reducing admixture and set controllers.
4. Write a few words about pozzolanic reaction.
5. Write the basic assumption in design of concrete mixtures with respect to compressive strength of concrete as per IS guidelines.
6. Give the equation to find the target mean strength of concrete as per IS guidelines.
7. Write the dimensions of standard slump cone to determine the workability of concrete.
8. Write about a bleeding of concrete.
9. Justify why smaller size coarse aggregates are recommended for use in high strength concrete.
10. Write any two applications of fibre reinforced concrete.

**PART B — (5 × 13 = 65 marks)**

11. (a) Illustrate the test procedure of determination of initial setting time and final setting time of cement as per IS 4031 guidelines. Also explain the significance of determination of same.

Or

- (b) Describe the test procedure on determination of compressive strength of cement and soundness of cement as per Indian Standard guidelines. Also explain the significance of determination of same.
12. (a) Discuss the process of production of silica fume and positive impact of addition of silica fume in concrete.

Or

- (b) Discuss the process of production of Ground granulated blast furnace slag and positive impact of addition of Ground granulated blast furnace slag in concrete.
13. (a) Brief in detail on stepwise procedure to design concrete mixture as per IS 10262.

Or

- (b) Write the various limiting values and data requirements for design of concrete mixture as per IS 10262.
14. (a) Write the test procedure to determine compressive strength and flexural strength of concrete as per IS 516 guidelines.

Or

- (b) Explain the test procedure to determine slump and compacting factor of concrete as per IS guidelines.
15. (a) Write the important characteristics of self-compacting concrete and its applications.

Or

- (b) Illustrate the different types of lightweight concrete and its applications.

**PART C — (1 × 15 = 15 marks)**

16. (a) Discuss in detail on various source of aggregate (river bed or quarry) that can affect the properties of concrete.

Or

- (b) Suggest some measures to increase the early age compressive strength of concrete with Class F fly ash as cement replacement.