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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 30099

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Fourth Semester

Civil Engineering

CE 3403 – CONCRETE TECHNOLOGY

(Regulations – 2021)

Time : Three hours Maximum : 100 marks

(Permitted IS : 10262 : 2019)

(Without any Annexures)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the function of gypsum in the manufacture of cement?
2. Mention the constituents of ordinary portland cement.
3. What is the purpose of retarder in concrete?
4. Which chemical is used as accelerator in concrete?
5. What is meant by proportioning of concrete?
6. Distinguish between design mix and nominal mix of concrete.
7. What are the routine standard tests carried out for fresh concrete during inspection?
8. List the factors affecting workability of concrete.
9. List the various types of polymer concrete.
10. Mention the applications of high strength concrete.

PART B — (5 × 13 = 65 marks)

11. (a) Explain any four special cements with their chemical composition and applications.

Or

(b) Elaborate the various characteristics of aggregates influencing the properties of concrete.

12. (a) What is an admixture? Enumerate any two types of chemical admixtures.

Or

(b) Explain the different types of Mineral Admixture added in the concrete and their effects on properties of concrete.

13. (a) Explain the procedure to design a concrete mix based on ACI method for construction of residential building.

Or

(b) List the types of mixing of concrete and write brief note on physical properties of materials required for concrete mix design.

14. (a) Mention the methods to measure the workability of concrete in field. Explain any two.

Or

(b) Describe the tests to be conducted for the properties of hardened concrete.

15. (a) Explain the properties of fibre reinforced concrete and its applications.

Or

(b) Explain the process of manufacturing of light weight concrete and its applications.

PART C — (1 × 15 = 15 marks)

16. (a) Design M35 grade of concrete using IS: 10262- 2019 code for the following data:

Exposure condition : severe,

Degree of workability : slump = 50 mm,

Cement: OPC (specific gravity = 3.15),

Fine aggregate : Zone II sand (specific gravity = 2.64),

Coarse aggregate : maximum size = 20 mm (specific gravity = 2.7),

Water absorption of coarse aggregate = 1%,

Free surface moisture insand = 2%.

Assume any data.

Or

(b) What is RMC? Explain the factors on which the property of RMC depends and any two examples of ready-mix concrete technologies with special properties and performance.

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