

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) (FT/WP/S4PT) Examinations April 2026 (2019 Scheme)

Course Code: CET352

Course Name: ADVANCED CONCRETE TECHNOLOGY

Use of attested copies of IS:10262 -2019 pages 3 to 6 is permitted

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | What is the significance of initial and final setting time of cement | (3) |
| 2 | Explain the effect of shape of coarse aggregates on properties of fresh concrete. | (3) |
| 3 | What are mineral admixtures? Give two examples and their uses. | (3) |
| 4 | What are the objectives of concrete mix design? | (3) |
| 5 | Compare the concrete cylinder test and cube test | (3) |
| 6 | List any three factors affecting properties of fresh concrete. | (3) |
| 7 | List any three factors affecting the durability of concrete. | (3) |
| 8 | How is carbonation detected in concrete | (3) |
| 9 | List the tests used in self-compacting concrete and the parameters measured | (3) |
| 10 | List any three advantages and disadvantages of light weight aggregate concrete. | (3) |

PART B

Answer one full question from each module, each carries 14 marks.

Module I

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|----|---|-----|
| 11 | a) Explain the manufacturing process of ordinary Portland cement. | (7) |
| | b) Discuss the mechanism of hydration of cement compounds. | (7) |

OR

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|----|--|-----|
| 12 | a) Explain the different types of chemical admixtures used in concrete and their effects | (8) |
| | b) Distinguish between bleeding and segregation. What are its causes and control measures? | (6) |

Module II

- | | | |
|----|---|------|
| 13 | a) Explain the procedure for design of concrete mix as per IS 10262:2019. | (10) |
| | b) Differentiate between nominal mix and design mix | (4) |

OR

- | | | |
|----|---|-----|
| 14 | a) Discuss the factors affecting mix proportion in concrete | (8) |
|----|---|-----|

- b) Explain sampling and acceptance criteria to be followed to maintain quality of concrete. (6)

Module III

- 15 a) Describe the slump test and compaction factor test for workability and compare them (10)
b) Explain the effect of water–cement ratio on the strength of concrete. (4)

OR

- 16 a) Define shrinkage. Explain the different types of shrinkage observed in concrete. (8)
b) Briefly explain the maturity concept in concrete. (6)

Module IV

- 17 a) What are the major causes of durability problems in concrete? (6)
b) Explain the mechanisms of corrosion of steel reinforcement and its prevention. (8)

OR

- 18 a) Explain the principle and procedure of the ultrasonic pulse velocity test. (8)
b) Write short notes on the rebound hammer test and core cutting test. (6)

Module V

- 19 a) Write short notes on the following: (9)
(i) High performance concrete
(ii) Fibre reinforced concrete
(iii) Roller compacted concrete
b) What are the advantages of ready-mix concrete? (5)

OR

- 20 a) Explain the special concreting techniques used for underwater concrete works (6)
b) Write short notes on 3D concrete printing and prefabrication technology. (8)
