

**THE KAVERY ENGINEERING COLLEGE**  
(An Autonomous Institution)

**B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024**

*Fourth Semester*

*Civil Engineering*

**CE3403–Concrete Technology**

IS 10262:2019 & IS 456:2000 Can be Permitted

*Regulations - 2021*

*Duration : 3 Hrs*

*Maximum: 100 Marks*

**PART – A(ANSWER ALL QUESTIONS) (Marks 10\*2=20)**

| <i>Q.No</i> | <i>Questions</i>                                                                  | <i>BLT</i> | <i>CO</i> | <i>Marks</i> |
|-------------|-----------------------------------------------------------------------------------|------------|-----------|--------------|
| 1.          | Mention the constituents of ordinary Portland cement.                             | RE         | 1         | 2            |
| 2.          | Comment on the quality of water used for concreting.                              | UN         | 1         | 2            |
| 3.          | Summarize about mineral Admixtures.                                               | UN         | 2         | 2            |
| 4.          | Write any two brand name of water proofing chemicals.                             | RE         | 2         | 2            |
| 5.          | Mention the objectives of concrete mix design.                                    | RE         | 3         | 2            |
| 6.          | Classify different types of concrete mixes.                                       | UN         | 3         | 2            |
| 7.          | Name the routine standard tests carried out for fresh concrete during inspection. | RE         | 4         | 2            |
| 8.          | Define segregation.                                                               | RE         | 4         | 2            |
| 9.          | List out the current developments in fibre reinforced concrete.                   | RE         | 5         | 2            |
| 10.         | Illustrate the properties of high performance concrete.                           | UN         | 5         | 2            |

**PART – B (ANSWER ALL QUESTIONS) (Marks 5\*13 = 65)**

| <i>Q.No</i> | <i>Questions</i>                                                                                                                  | <i>BLT</i> | <i>CO</i> | <i>Marks</i> |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------------|
| 11.         | a List the various types of cement indicating their use for different applications.                                               | AP         | 1         | 13           |
|             | Or                                                                                                                                |            |           |              |
|             | b Explain the following test conducted on coarse aggregate<br>i. Crushing value<br>ii. Impact value                               | AP         | 1         | 13           |
| 12.         | a Differentiate between accelerators and retarders with suitable example and also how can you determine the dosage of admixtures. | UN         | 2         | 13           |
|             | Or                                                                                                                                |            |           |              |
|             | b Explain the effect of concrete properties while adding silica fume and GGBS.                                                    | UN         | 2         | 13           |
| 13.         | a Explain the mix design procedure of concrete as per IS method.                                                                  | AP         | 3         | 13           |
|             | Or                                                                                                                                |            |           |              |

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|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|----|
| b   | Design a concrete mix for M65 grade of concrete using F type fly ash. Use BIS method with following data:<br>Type of cement = PPC 53 grade<br>Maximum size of aggregate = 20 mm<br>Exposure condition = Severe (RCC)<br>Workability = 110 mm (slump)<br>Minimum cement = 330 kg/m <sup>3</sup><br>Maximum W/C = 0.46<br>Method of placing concrete = Pumping<br>Degree of supervision = Good<br>Type of aggregate = Crushed Angular aggregates<br>Specific gravity of Fine and Coarse aggregate = 2.7 and 2.80<br>Specific gravity of fly ash = 2.2<br>Water absorption = CA-0.5% , FA -Nil<br>Grading of coarse aggregate is conforming to Table 2 of IS 383 and rading of fine aggregate in zone II. | AP | 3 | 13 |
| 14. | a Discuss the following tests for concrete:<br>i. Flow test<br>ii. Slump test<br><br>Or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RE | 4 | 13 |
|     | b Summarize and explain the methods used for testing Hardened concrete?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RE | 4 | 13 |
| 15. | a Explain the process of manufacturing RMC with its applications.<br><br>Or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | AP | 5 | 13 |
|     | b i Compare light weight concrete and high strength concrete.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AP | 5 | 8  |
|     | ii Write short notes on SIFCON.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AP | 5 | 5  |

*PART – C (Marks 1\*15 = 15)*

| Q.No | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | BLT | CO | Marks |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|-------|
| 16.  | a Design a M35 concrete mix using IS method of Mix Design for the following data:<br>1) Maximum size of aggregate - 20mm (Angular)<br>2) Degree of workability - 0.90 compaction factor.<br>3) Quality control - good<br>4) Type of exposure - mild<br>5) Specific Gravity<br>A. Cement - 3.12<br>B. Sand - 2.63<br>C. Coarse aggregate - 2.66<br>6) Water absorption:<br>A. Coarse aggregate - 0.5%<br>B. Fine aggregate - 1.0%<br>7) Free surface moisture:<br>A. Coarse aggregate - Nil<br>B. Fine aggregate - 2.2%<br>8) Sand confirms to Zone I grading.<br>Assume any other data required suitably.<br><br>Or | AP  | 3  | 15    |
|      | b Discuss in detail about the utilization of various forms of industrial wastes in concrete.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AP  | 5  | 15    |