Ref. No. EX/CON/PC/B/T/224/2024

# B. E. CONSTRUCTION ENGINEERING 2ND YEAR 2ND SEMESTER - 2024

## SUBJECT: CONCRETE TECHNOLOGY

**Time : Three Hours** **( 50 Marks for each Part)** **Full Marks : 100**

**Use separate answer script for each Part**

**PART I ( 50 Marks)**

| | Question No. | | Marks |
|---|---|---|---|
| **CO1 [20]** | | **Answer any two from question (1), question (2) and question (3) in this block** | |
| | Q1. | Briefly discuss particle shape and texture of aggregate. How do they affect the performance of concrete? | 10 |
| | Q2a. | What are the different purposes of using chemical admixtures in concrete ? | 05 |
| | Q2b. | Write a short note on accelerating admixture. | 05 |
| | Q3a. | Define M-25 grade concrete ? | 02 |
| | Q3b. | Describe the process of collection and sampling aggregate from stockpile for laboratory tests. | 03 |
| | Q3c. | The coarse aggregates passing through 20mm IS sieve and retained on 10mm IS sieve will be considered flaky if the least dimension is less than<br>a) 12mm b) 9mm c) 15mm d)18mm | 01 |
| | Q3d. | Write a short not on deleterious constituents in aggregate | 04 |
| **CO3 [10]** | | **Answer any two from question (4), question (5) and question (6) in this block** | |
| | Q4. | State the guidelines for a site supervisor for checking the compaction of concrete by nozzle vibrator. How one can ensure that the compaction by nozzle vibrator is complete? | 05 |
| | Q5. | What do you understand by curing of concrete ? Write a short note on curing by ponding/ immersion in water ? | 05 |
| | Q6. | Write a short note on pouring of concrete by Tremie method. | 05 |
| **CO4 [10]** | Q7. | What are the purposes of concrete mix design ? | 05 |
| | Q8. | Explain why the concrete mix design is usually carried out for a Target Mean strength in stead of characteristic compressive strength. | 05 |

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**Part I ( 50 Marks)**

| | Question No. | | Marks |
|---|---|---|---|
| **CO5 [10]** | | **Answer any one from question (9) and question (10) in this block** | |
| | Q9. | Briefly discuss the procedure of casting, curing and testing of concrete cube specimens | 10 |
| | Q10. | Briefly discuss the different factors that affect durability of concrete. | 10 |

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B. Construction Engineering 2nd year 1st semester Examination – 2024
Subject: Concrete Technology

**Total Time : Three hours**
**Full Marks: 100**

*Part-II(Full Marks-50)*
*Use separate Answer Sheet for Each Part*

| | |
|---|---|
| CO1 [25] | Answer all from Question 1.[10]<br>[1] (a)Draw a flow chart diagram fordry process of manufacturing of OPC. [2]<br>(b) Describe the role of Alite, Belite, $C_3A$ and $C_4AF$.[8]<br>[2] Write short notes on any three from **(a), (b),(c),and (d)** in this block[5×3=15]<br>a. Portland pozzolanic Cement.<br>b. Portland composite Cement.<br>c. Rule of admixture in concrete.<br>d. IS classification of different types of Cement. |
| CO2 [15] | [3]Write Short notes on any three in *thisblock* - [5×3=15]<br>a. Bogues compounds.<br>b. Causes of segregation and bleeding in concrete.<br>c.Measurement of workability in concrete. Write the requirements of slump value as per IS codes in different types of RCC construction..<br>d. Factors affecting the workability of concrete.<br>e. Chloride effect in concrete. |
| CO5 [10] | *[4]Answer any* **two(2)**[5×2=10]<br>a. Describe in brief the steps for durability of concrete.<br>b. Write short noteson the phenomenon of carbonation of concrete and its effect on concrete.<br>c. Write a short note on sulphate attack on concrete. |

**CO1:** Describe cement, Types of cement, aggregate, admixture and concrete (K1)
**CO2:** Describe hydration of cement and properties of concrete in fresh state (K2)
**CO3:** Describe different field activities related to concrete (K2).
**CO4:** Develop concrete mix proportions through Mix Design (K3)
**CO5:** Assess different measures for ensuring durability of concrete and Construction Quality Control& strength of concrete (K3)