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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Regular Examinations February-2022**

**CONCRETE TECHNOLOGY**

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

- |   |   |  |    |    |
|---|---|--|----|----|
| 1 | a | Explain heat of hydration and hydration process of cement in detail. | L2 | 2M |
|   | b | Write different mechanical properties of concrete.                   | L1 | 2M |
|   | c | List out different tests in NDT.                                     | L1 | 2M |
|   | d | How the permeability of concrete affects the strength?               | L1 | 2M |
|   | e | What is nominal mix and design mix?                                  | L1 | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- |   |   |  |    |    |
|---|---|--|----|----|
| 2 | a | List the physical properties of aggregates. Explain any two properties.                            | L2 | 5M |
|   | b | What are all the mechanical properties of aggregates? Explain any one with experimental procedure. | L2 | 5M |

**OR**

- |   |  |   |    |     |
|---|--|---|----|-----|
| 3 |  | What are Bouge's compounds? Explain in detail how each one of these compounds influences the strength and setting properties of cement. | L1 | 10M |
|---|--|---|----|-----|

**UNIT-II**

- |   |  |  |    |     |
|---|--|--|----|-----|
| 4 |  | Explain the various factors affecting strength of hardened concrete. | L2 | 10M |
|---|--|--|----|-----|

**OR**

- |   |   |  |    |    |
|---|---|--|----|----|
| 5 | a | Shortly explain about Gel space ratio.         | L2 | 5M |
|   | b | Explain different methods of curing procedure. | L2 | 5M |

**UNIT-III**

- |   |   |  |    |    |
|---|---|--|----|----|
| 6 | a | What is shrinkage of concrete?                               | L1 | 5M |
|   | b | Explain the various factors affecting shrinkage of concrete. | L2 | 5M |

**OR**

- |   |  |  |    |     |
|---|--|--|----|-----|
| 7 |  | Explain the procedure for UPV and Rebound hammer test. | L2 | 10M |
|---|--|--|----|-----|

**UNIT-IV**

8 Explain briefly about chloride attack on concrete. **L2 10M**

**OR**

9 How would you improve the quality of concrete by doing surface treatment? Explain with appropriate examples. **L1 10M**

**UNIT-V**

10 Explain the mix design procedure of concrete as per IS code Method. **L2 10M**

**OR**

11 Design a M35 concrete mix using IS method of Mix Design for the following data: **L3 10M**

- i) Maximum size of aggregate - 20mm (Angular)
  - ii) Degree of workability - 0.90 compaction factor.
  - iii) Quality control - good
  - iv) Type of exposure - mild
  - v) Specific Gravity: Cement - 3.12, Sand - 2.63, Coarse aggregate - 2.666
  - vi) Water absorption: Coarse aggregate - 0.5%, Fine aggregate - 1.0%
  - vii) Free surface moisture: Coarse aggregate – Nil, Fine aggregate - 2.2%
  - viii) Sand confirms to Zone I grading.
- Assume any other data required suitably.

\*\*\*END\*\*\*