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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year I Semester Regular & Supplementary Examinations February 2018
ADVANCED CONCRETE TECHNOLOGY
(Structural Engineering)**

Time: 3 hours

Max. Marks:60

(Answer all Five Units 5 X 12 =60 Marks)

UNIT-I

- 1 a Write down the chemical composition of cement. 5M
b Define alkali-aggregate reaction. Explain the factors influencing the alkali-aggregate reaction. 7M

OR

- 2 a Write a detailed note on High performance concrete. 6M
b What are mineral admixtures? Explain any one mineral admixture. 6M

UNIT-II

- 3 Using ACI method, design a concrete mix for the following data.
Characteristic compressive strength = 30 N/mm², Standard deviation = 4 N/mm²
Specific gravity of coarse and fine aggregates are 2.70 and 2.65 respectively.
Dry rodded bulk density of coarse aggregate = 1600 Kg/m³
Fineness modulus of fine aggregate = 2.8, Workability required = 50mm Slump,
Water absorption of coarse aggregate = 1%
Free surface moisture in sand = 2%, Assume any other essential data. 12M

OR

- 4 a Explain the factors to be considered in the design of concrete mix. 6M
b Compare ACI method of mix design with IS method of mix design. 6M

UNIT-III

- 5 a Define workability of concrete. Briefly explain the factors effecting workability of concrete. 6M
b Define curing. Explain about membrane curing. 6M

OR

- 6 a Explain maturity concept of concrete. 6M
b Explain how dynamic modulus of concrete can be determined. 6M

UNIT-IV

- 7 a Explain the measures to be taken to control the corrosion of steel reinforcement. 6M
b Explain about fire resistance of concrete. 6M

OR

- 8 List out the various non-destructive tests on concrete and explain any two methods with sketches. 12M

UNIT-V

- 9 a Write short notes on self compacting concrete. 6M
b Explain the properties of various fibres to be used in concrete. 6M

OR

- 10 a Briefly explain about various types of light weight aggregates. 6M
b Briefly explain the applications of polymer impregnated concrete. 6M

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