

ON
(10:5 pm)

SUBJECT: SPECIAL CONCRETES

CEMENT CONCRETE

Unit-I

Concrete Making Materials: Cement- Bogue's compounds – Hydration Process– Types of cement – Aggregates – Gradation Charts – Combined aggregate-Alkali Silica Reaction -Admixtures – Chemical and Mineral admixtures..

Unit-II

Fresh Concrete: Concrete workability tests - Concrete setting times of Fresh Concrete - Segregation and bleeding.

Hardened Concrete: Abram's law- Gel space ratios, Maturity Concept – Stress Behaviour – Creep and Shrinkage – Durability tests on concrete.

Unit-III

Concrete mix design: Quality Control - Quality assurance - Quality audit- Mix Design method – BIS method, ACI method, DOE method.

TEXT BOOKS:

1. Concrete Technology by M.S.Shetty, S.Chand & Co.
2. Concrete Technology by M.L.Gambhir, Tata Mc-Graw Hill Education

REFERENCES:

1. Design of Concrete Mixes by N.Krishna Raju, CBS Publications.
2. Concrete Technology, A.M.Neville & JJ Brooks, Prentice Hall; 2 edition

SPECIAL CONCRETES

Unit-IV

Concrete Micro structure - Definition-Significance-Complexities-Microstructure of the Aggregate Phase-Microstructure of the Hydrated Cement Paste-Interfacial Transition Zone in Concrete.

Concrete Mechanics- Elastic Behaviour -Viscoelasticity -Temperature Distribution in Mass Concrete -Fracture Mechanics - Poromechanics of Concrete Exposed to Freezing Temperatures -Mechanics of Concrete Affected by the Alkali-Silica Reaction

Unit-V

High Strength Concrete – Ultra High Strength Concrete. High Performance Concrete- Requirements and properties of High Performance Concrete

Special purpose Concretes –Self compacting concrete -Polymer concrete –Light weight concrete – Fiber Reinforced Concrete - Requirements and Guidelines – Advantages and Applications.

TEXT BOOKS:

1. Properties of Concrete by A.M.Neville, ELBS publications.
2. Concrete Technology by A.K. Santhakumar, Oxford Press.

REFERENCES:

1. Special Structural concretes by Rajat Siddique, Galgotia Publications.
2. Concrete: Micro Structure by P.K.Mehta, McGraw-Hill Education.

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