CN5001 ADVANCED CONCRETE TECHNOLOGY

DETAILED SYLLABUS

UNIT I CONCRETE MAKING MATERIALS

Aggregates classification, IS Specifications, Properties, Grading, Methods of combining aggregates, specified gradings, Testing of aggregates. Cement, Grade of cement, Chemical composition, Testing of concrete, Hydration of cement, Structure of hydrated cement, special cements. Water Chemical admixtures, Mineral admixture.

UNIT II TESTS ON CONCRETE

Properties of fresh concrete, Hardened concrete, Strength, Elastic properties, Creep and shrinkage – Durability of concrete.

UNIT III MIX DESIGN

Principles of concrete mix design, Methods of concrete mix design, IS Method, ACI Method, DOE Method – Statistical quality control – Sampling and acceptance criteria.

UNIT IV SPECIAL CONCRETE

Light weight concrete, Fly ash concrete, Fibre reinforced concrete, Sulphur impregnated concrete, Polymer Concrete – High performance concrete. High performance fiber reinforced concrete, Self- Compacting-Concrete, Geo Polymer Concrete, Waste material based concrete – Ready mixed concrete.

UNIT V CONCRETING METHODS

Process of manufacturing of concrete, methods of transportation, placing and curing. Extreme weather concreting, special concreting methods. Vacuum dewatering – Underwater Concrete. Placement temperature controlled concrete for mass concrete.

REFERENCES

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3. Neville, A.M., Properties of Concrete, Prentice Hall, 1995, London.

4. Santhakumar.A.R. ;"Concrete Technology",Oxford University Press,2007.

5. Shetty M.S., Concrete Technology, S.Chand and Company Ltd. Delhi, 2003.

OBJECTIVES

To study the properties of concrete making materials, tests, mix design, special concretes and various methods for making concrete.