NPTEL Video Course - Civil Engineering - NOC:Admixtures and Special Concretes

Subject Co-ordinator - Prof. Manu Santhanam

Co-ordinating Institute - IIT - Madras

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Lecture 30 - Mineral Admixtures: Pozzolonic activity
Lecture 31 - Mineral Admixtures: Electrical Conductivity method, Frattini test and Lime saturation method
Lecture 32 - Mineral Admixtures: Strength Activity test, Lime reactivity test, Mixture Proportioning and R3 t
Lecture 33 - Mineral Admixtures: Flyash - Part 1: Introduction
Lecture 34 - Mineral Admixtures: Flyash - Part 2: Classification and structure
Lecture 35 - Mineral Admixtures: Flyash - Part 3: Effects on fresh concrete
Lecture 36 - Mineral Admixtures: Flyash - Part 4: Effects on hardened concrete
Lecture 37 - Mineral Admixtures: Silica fume - Part 1: Introduction
Lecture 38 - Mineral Admixtures: Silica fume - Part 2: Effects on fresh and hardened concrete
Lecture 39 - Mineral Admixtures: Silica fume - Part 3: Effects on Microstructure + GGBS - Part 1 : Introducti
Lecture 40 - Mineral Admixtures: GGBS - Part 2 : Properties
Lecture 41 - Mineral Admixtures: GGBS - Part 3 : Hydration of slag and Durability of slag cements
Lecture 42 - Mineral Admixtures: Metakaolin
Lecture 43 - Mineral Admixtures: LC3 - Part 1 : Introduction
Lecture 44 - Mineral Admixtures: LC3 - Part 2 : Comparision with other SCMs
Lecture 45 - Mineral Admixtures: LC3 - Part 3 : Durability Performance
Lecture 46 - Mineral Admixtures: Agricultural ashes - Part 1 : Sugarcane bagasse ash
Lecture 47 - Mineral Admixtures: Agricultural ashes - Part 2 : Rice husk ash
Lecture 48 - Mineral Admixtures: Calorimeter
Lecture 49 - Mineral Admixtures: Pore solution analysis
Lecture 50 - Mineral Admixtures: CASH analysis in blended system and Life cycle assessment of concrete - Part
Lecture 51 - Life cycle assessment of concrete - Part 2
Lecture 52 - Life cycle assessment of concrete - Part 3
Lecture 53 - Special concretes - High strength concrete - Definition, design and concept of particle packing
Lecture 54 - Special concretes - High strength concrete - Particle packing models
Lecture 55 - Special concretes - High strength concrete - Mix designs, strength and durability
Lecture 56 - Special concretes - High strength concrete - Design attributes, fresh and hardened properties
Lecture 57 - Special concretes - High strength concrete - Stress:strain relationships, applications
Lecture 58 - Special concretes - Ultra high performance concrete - Design principles, strength, durability
Lecture 59 - Special concretes: Self compacting concrete -Introduction, design requirements and plastic shrin
Lecture 60 - Special concretes: Self compacting concrete - Segregation and laboratory tests
Lecture 61 - Special concretes - Self Compacting Concrete - Workability test methods, classifications and iss
Lecture 62 - Special concretes - Self Compacting Concrete - Design principles, mix designs, concrete properti
Lecture 63 - Special concretes - Mass concrete - Introduction, materials, thermal cracking
Lecture 64 - Special concretes - Mass concrete - Design guidelines, temperature differential measurement
Lecture 65 - Special concretes - Mass concrete - Temperature differential measurement, Design
Lecture 66 - Special concretes - Mass concrete - Temperature monitoring, nomogram, minimizing restraints
Lecture 67 - Special concretes - Mass concrete - Heat modelling
Lecture 68 - Special concretes - Lightweight concrete - Introduction, classifications

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Lecture 69 - Special concretes - Lightweight concrete - Foamed concrete, lightweight aggregates
Lecture 70 - Special concretes - Lightweight concrete - Light weigh aggregates, aerated concrete
Lecture 71 - Special concretes - High density concrete - Heavy weight aggregates, design, case stud
Lecture 72 - Special concretes - Concrete for 3D printing - Introduction, classification, printing process
Lecture 73 - Special concretes - Concrete for 3D printing - Developments, advantages, case study
Lecture 74 - Special concretes - Concrete for 3D printing - Critical parameters, yield stress
Lecture 75 - Special concretes - Concrete for 3D printing - Mix design approach, admixtures
Lecture 76 - Special concretes - Concrete for 3D printing - Failure modes, buildability, early-age beahaviour

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