

LESSON PLAN: CONCRETE TECHNOLOGY

Discipline: CIVIL ENGINEERING	Semester: 6TH	Name of the faculty: BIBHUTI BHUSAN DAS
Subject: CONCRETE TECHNOLOGY	No. of Days/Per Week class allotted: 4	No. of Weeks: 15
Week	Class Day	1.0 Concrete as a construction material:
1st	1st	1.1 Grades of concrete.
	2nd	1.2 Advantages and disadvantages of concrete
		2.0 Cement:
	3rd	2.1 Composition
	4th	2.2 Hydration of cement, water cement ratio
2nd	1st	2.3 Compressive strength
	2nd	2.4 Fineness of cement, setting time,
	3rd	2.5 Soundness, types of cement.
		3.0 Aggregate:
	4th	3.1 Classification and characteristics of aggregate
3rd	1st	3.2 Deleterious substances in aggregates
	2nd	3.3 Fineness modulus
	3rd	3.4 Grading of aggregate, I.S.383
	4th	3.5 QUESTION & ANSWER
		4.0 Water:
4th	1st	4.1 Quality of water
	2nd	4.2 Mixing and curing
		5.0 Admixtures:
	3rd	5.1 Important functions, classification of admixtures, I.S 9103
	4th	5.2 Accelerating admixtures
5th	1st	5.3 Retarding admixtures
	2nd	5.4 Water reducing admixtures,
	3rd	5.5 Air containing admixtures.
		6.0 Properties of fresh concrete:
	4th	6.1 Concept of fresh concrete, workability
6TH	1st	6.2 Slump test
	2nd	6.3 Compacting factor test, V-tee consistency test and flow test
	3rd	6.4 Requirement of workability, I.S.1199.
	4th	7.0 Properties of hardened concrete:
7TH	1st	7.1 Cube and cylinder compressive strengths, flexural strength of concrete.
	2nd	7.2 Flexural strength of concrete
	3rd	7.3 Stress-strain and elasticity
	4th	7.4 Phenomena of creep and shrinkage
8TH	1st	7.5 permeability, durability of concrete
	2nd	7.6 durability of concrete, sulphate, chloride and acid attack on concrete
	3rd	7.7 efflorescence.
	4th	7.8 ASSIGNMENT
		8.0 Concrete mix Design
9TH	1st	a) Introduction
	2nd	b) Data or input required for mix design.
	3rd	c) Nominal mix concrete & design mix concrete.
	4th	d) Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design (I.S.10262)
		9.0 Production of concrete:

10TH	1st	9.1 Batching of materials, mixing of concrete materials
	2nd	9.2 Transportation, placing of concrete, compaction of concrete.
	3rd	9.3 Compaction methods, vibrators, curing, when to start and time of curing
	4th	9.4 Formwork-requirements and types, stripping of forms.
10.0 Inspection and Quality Control of Concrete		
11TH	1st	10.1 Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of concrete, field quality control
		10.2 Sampling & acceptance criteria as per Clause 15 & 16 of IS:456.
	2nd	10.3 Mixing, Transporting, Placing & curing requirements of Concrete as per I.S.456.
	3rd	10.4 Inspection and Testing as per Clause 17 of IS:456.
	4th	10.5 Durability requirements of Concrete as per I.S:456.
11.0 Special Concrete		
12TH	1st	11.1 Introduction to ready mix concrete
	2nd	11.2 high performance concrete
	3rd	11.3 silica fume concrete, ,
	4th	11.4 shot-crete concrete or gunnitng
12.0 Deterioration of concrete and its prevention:		
13TH	1st	12.1 Types of deterioration
	2nd	12.2 prevention of concrete deterioration,
	3rd	12.3 corrosion of reinforcement, effects and prevention.
13.0 Repair technology for concrete structures:		
	4th	13.1 Symptom, cause and prevention and remedy of defects during construction
14TH	1st	13.2 cracking of concrete due to different reasons
	2nd	13.3 repair of cracks for different purposes
	3rd	13.4 selection of techniques, polymer based repairs
	4th	13.5 common types of repairs.

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