Lesson Plan

PE/CE-29-T Concrete Technology

Week	Theory	
	Lecture day	**Topic (Including Assignment Test)**
1st	1	**Concrete as Structural Material:** Introduction, preparation of concrete, grades of concrete
	2	advantages of concrete, concept of quality control.
	3	**Concrete Making Materials: Cement-** tests on cement (physical tests), types of Portland cement,
2nd	4	various types of cement-ordinary Portland cement, rapid hardening cement, low heat cement,
	5	sulphate resistant cement, Portland-pozzolona cement, high strength Portland cement, high alumina cement,
	6	waterproof cement, white Portland cement, hydrophobic cement, colored Portland cement.
3rd	7	**Aggregates-** classification of aggregates based on petrography, size, shape and textures,
	8	deleterious substances in aggregates, bulking of fine aggregates
	9	grading of aggregates as per IS-383-1970, fineness modulus.
4th	10	**Properties of Concrete:** Introduction, workability, factors influencing workability, measurement of workability,
	11	requirements of workability, properties of hardened concrete,
	12	stress and strain characteristics of concrete, Young's modulus of concrete, creep and shrinkage of concrete, permeability of concrete,
5th	13	durability of concrete sulphate attack, fire-resistance, thermal properties of concrete, construction joints, expansion and contraction joints.
	14	**Production of Concrete:** Introduction, batching of materials, mixing of concrete materials, transportation of concrete, compaction of concrete,
	15	ready mixed concrete, vibrators, Internal vibrators, external vibrators, concrete curing and formwork removal.
6th	16	**Non-Destructive Testing of Concrete:** Significance of Non-Destructive Testing,
	17	Rebound Hammer, Ultrasonic pulse velocity techniques,
	18	Penetration techniques, pullout tests,
7th	19-21	**MINOR TEST I**

8th	22	vibration methods, Radio-active techniques, Cover meter, core-tests.
	23	vibration methods, Radio-active techniques, Cover meter, core-tests.
	24	vibration methods, Radio-active techniques, Cover meter, core-tests.
9th	25	**Deterioration of Concrete & its Prevention:** Causes of concrete deterioration, deterioration by water, surface weir,
	26	**Deterioration of Concrete & its Prevention:** Causes of concrete deterioration, deterioration by water, surface weir,
	27	**Deterioration of Concrete & its Prevention:** Causes of concrete deterioration, deterioration by water, surface weir,
10th	28	frost action, deterioration by chemical reactions,
	29	sulphate attack, alkali-aggregate reaction,
	30	corrosion of embedded steel in concrete, Prevention of deterioration of concrete
11th	31	**Repair Technology for Concrete Structures:** Symptoms and diagnosis of distress, evaluation of cracks
	32	repair of cracks, common types of repairs
	33	distress in fire damaged structures, underwater repairs.
12th	34	**Special Concrete:** Light weight concrete, definition and its properties, applications,
	35	high strength concrete, definitions, its properties and applications,
	36	Mass Concrete, waste material based concrete,
13th	37	shotcrete, fiber reinforced concrete:
	38	Materials Fibre types and properties, ferrro-cement, polymer concrete composites,
	39	heavy weight concrete for radiation shielding.
14th	40-42	**MINOR TEST II**
15th	43	**Prestressed Concrete**: Introduction, basic concepts
	44	classifications and types of prestressing, prestressing systems,
	45	properties of materials, pre tensioned and post tensioned concrete elements,