

### LESSON PLAN – CONCRETE TECHNOLOGY

Course: Diploma in Civil Engineering  
Institute- Govt. Polytechnic, Sonapur  
Semester: 6th  
Total Theory Periods: 60  
Periods per Week: 4  
Session- 2026S

Sl. No.	Week No.	Class No.	Topic
1	1	1	Introduction to Concrete as a Construction Material
2	1	2	Grades of Concrete
3	1	3	Advantages & Disadvantages of Concrete
4	1	4	Cement – Introduction & Composition
5	2	5	Hydration of Cement
6	2	6	Water–Cement Ratio & Compressive Strength
7	2	7	Fineness of Cement
8	2	8	Setting Time & Soundness of Cement
9	3	9	Types of Cement

10	3	10	Aggregates - Classification & Characteristics
11	3	11	Fineness Modulus of Aggregate
12	3	12	Grading of Aggregates as per IS 383
13	4	13	Quality of Water for Mixing & Curing
14	4	14	Admixtures - Functions & Classification
15	4	15	Accelerating & Retarding Admixtures
16	4	16	Water Reducing & Air Entraining Admixtures (IS 9103)
17	5	17	Fresh Concrete - Concept & Workability
18	5	18	Slump Test
19	5	19	Compacting Factor Test
20	5	20	Vee-Bee Consistency & Flow Test

21	6	21	Requirement of Workability & IS 1199
22	6	22	Hardened Concrete - Compressive Strength
23	6	23	Flexural Strength of Concrete
24	6	24	Stress-Strain Relationship & Elasticity
25	7	25	Creep of Concrete
26	7	26	Shrinkage of Concrete
27	7	27	Permeability & Durability of Concrete
28	7	28	Sulphate, Chloride & Acid Attack
29	8	29	Efflorescence
30	8	30	Concrete Mix Design - Introduction
31	8	31	Data/Input Required for Mix Design
32	8	32	Nominal Mix Concrete
33	9	33	Design Mix Concrete

34	9	34	Basic Considerations for Mix Design
35	9	35	IS 10262 Method of Mix Design
36	9	36	Numerical Illustration (Conceptual)
37	10	37	Batching of Concrete
38	10	38	Mixing of Concrete
39	10	39	Transportation of Concrete
40	10	40	Placing & Compaction
41	11	41	Curing of Concrete
42	11	42	Formwork - Requirements & Types
43	11	43	Stripping of Formwork
44	11	44	Quality Control of Concrete as per IS 456
45	12	45	Factors Affecting Quality of Concrete
46	12	46	Concrete Operations as per IS 456

47	12	47	Inspection & Testing - IS 456 Clause 17
48	12	48	Durability Requirements as per IS 456
49	13	49	Ready Mix Concrete
50	13	50	High Performance Concrete
51	13	51	Silica Fume Concrete
52	13	52	Shotcrete / Guniting
53	14	53	Deterioration of Concrete - Types
54	14	54	Prevention of Concrete Deterioration
55	14	55	Corrosion of Reinforcement - Effects
56	14	56	Prevention of Reinforcement Corrosion
57	15	57	Defects in Concrete - Causes
58	15	58	Cracks in Concrete - Types
59	15	59	Repair of Cracks

60	15	60	Polymer Based Repairs & Common Methods
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M. Kaplan  
22/12/2025

Approved by

P. ...  
22/12/25