

Government Polytechnic Arwal

(Department of Civil Engineering)

Lecture Plan

Name of the Faculty		ADARSH SINHA			
Email-id and Mobile number		adarshsinha.25@gmail.com, 9535820074			
Semester/Branch		3 rd / Civil Engg.			
Subject Name(Subject Code)		Concrete technology (1615305)			
Week/Hrs		3 hrs/week			
Theory					
Units	Week	Lecture Day	Topics	Methods of Teaching	Remarks
1 Properties of Cement	1	1	Physical properties of Ordinary Portland cement (OPC), determination and test on OPC ,Hydration of cement	PPT/Video/Hand written notes(PDF)	
		2	physical properties of cement – fineness, standard consistency, initial & final setting times.	PPT/Video/Hand written notes(PDF)	
		3	compressive strength & soundness, different grades of opc 33, 43 , 53 & their specification of physical properties as per relevant I. S. codes.	PPT/Video/Hand written notes(PDF)	
	2	4	Adulteration of cement (field test), storing cement at site, effect of storage of cement on properties of cement / concrete.	PPT/Video/Hand written notes(PDF)	
		5	Types of Cement Physical properties, specifications as per relevant IS codes & field application of the following types of cement i) Rapid hardening cement ii) Low heat cement iii) Pozzolana Portland cement	PPT/Video/Hand written notes(PDF)	
		6	Types of Cement Physical properties, specifications as per relevant IS codes & field application of the iv) Sulphate resisting cement V) Blast furnace slag cement Vi) White cement	PPT/Video/Hand written notes(PDF)	
2 Properties of Aggregates	3	7	ASSIGNMENT 1 AND QUIZ 1 OF UNIT 1	PDF/Google form	
		8	Properties of fine aggregates : Concept of size, shape, surface texture, strength, specific gravity, bulk density , water absorption, surface moisture, soundness, bulking impurities	PPT/Video/Hand written notes(PDF)	
	4	9	Determination of fineness modulus & grading zone of sand by sieve analysis.	PPT/Video/Hand written notes(PDF)	
		10	Determination of silt content in sand & their specification as per IS 383.	PPT/Video/Hand written notes(PDF)	
		11	Bulking of sand, phenomenon of bulking, its effect on concrete mix proportion.	PPT/Video/Hand written notes(PDF)	

	5	12	Properties of coarse aggregates : Concept of size, shape, surface texture, water absorption, soundness, specific gravity & bulk density	PPT/Video/Hand written notes(PDF)	
		13	Determination of fineness modulus of coarse aggregate by sieve analysis, grading of Coarse Aggregates.	PPT/Video/Hand written notes(PDF)	
		14	Determination of crushing value, impact value & abrasion value of coarse aggregate,	PPT/Video/Hand written notes(PDF)	
		15	Determination of flakiness index & elongation index of coarse aggregate and their specification.	PPT/Video/Hand written notes(PDF)	
3 Properties of concrete	4	16	ASSIGNMENT 2 AND QUIZ 2 OF UNIT 2	PDF/Google form	
		17	Introduction to concrete - Definition of concrete, necessity of supervision for concreting operation, different grades of concrete (ordinary concrete, standard concrete & high strength concrete as per provisions of IS 456- 2000),	PPT/Video/Hand written notes(PDF)	
		18	minimum grade of concrete for different exposure conditions, minimum grade of concrete for R.C.C., water retaining structure & in sea water construction, durability of concrete.	PPT/Video/Hand written notes(PDF)	
	5	19	Water cement ratio:- Definition of w/c ratio, Duff Abraham w/c law, significance of w/c ratio.	PPT/Video/Hand written notes(PDF)	
		20	selection of w/c ratio for different grades of concrete prepared from different grades of OPC as per graphs specified in IS 10262 -1982, maximum w/c ratio for different grades of concrete for different exposure conditions.	PPT/Video/Hand written notes(PDF)	
		21	Properties of fresh concrete Definition of workability, factors affecting workability of concrete. Determination of workability of concrete by slump cone test.	PPT/Video/Hand written notes(PDF)	
	6	22	compaction factor test, vee bee consistometer & flow table tests. Range values of workability requirement for different types of concrete works, cohesiveness, segregation, harshness, bleeding.	PPT/Video/Hand written notes(PDF)	
		23	Properties of hardened concrete Definition of compressive strength, durability, impermeability, elastic properties of concrete, modulus of elasticity of concrete. Creep.	PPT/Video/Hand written notes(PDF)	
		24	Factors affecting creep, shrinkage, factors affecting shrinkage	PPT/Video/Hand written notes(PDF)	
	7	25	CONCRETE MIX DESIGN:- Objectives of mix design, list of different method of mix design ,study of mix design procedure by I.S. method as per I.S. 10262- 1982.	PPT/Video/Hand written notes(PDF)	
		26	Determination of design mix proportion by mass for M 20 grade of concrete using I.S. Method for given data (such as grading zone of sand, proportion of 20 mm & 10 mm metals, specific gravities of cement, sand & aggregate , water absorption of sand & aggregate, compacting factor and exposure condition).	PPT/Video/Hand written notes(PDF)	
		27	Testing of concrete Significance of testing, determination of compressive strength of concrete cubes at different ages, interpretation & co-relation of test results.	PPT/Video/Hand written notes(PDF)	
	8	28	Determination of rebound index & compressive strength of concrete by rebound hammer test as per I.S. 13311, determination of quality of concrete by ultrasonic pulse velocity.	PPT/Video/Hand written notes(PDF)	

4 Quality Control of Concrete		29	ASSIGNMENT 3 AND QUIZ 3 OF UNIT 3	PDF/Google form	
		30	Batching, Different Types of Mixers & Vibrators Volume & weight batching, volume batching for nominal mixes & weight batching for design mix concrete.	PPT/Video/Hand written notes(PDF)	
	9	31	Types of mixers (tilting & non-tilting type) Different types of vibrators - needle vibrator, surface vibrator, table vibrator, principle & application of each type of vibrator	PPT/Video/Hand written notes(PDF)	
		32	Principle & application of each type of vibrator.	PPT/Video/Hand written notes(PDF)	
		33	Formwork : formwork for concreting, different types of formwork for different works such as beams, slabs, columns, well foundation, materials used for formwork	PPT/Video/Hand written notes(PDF)	
	10	34	Requirement of good formwork, stripping time for the removal of formwork as per I.S. 456- 2000 provisions for different structural members.	PPT/Video/Hand written notes(PDF)	
		35	Transportation, placing, compaction & finishing of concrete: Modes of transportation of concrete , precautions to be taken during transportation and placing of concrete in formwork.	PPT/Video/Hand written notes(PDF)	
	11	36	compaction of concrete, methods of compaction, care to be taken during compaction, purpose of finishing, types of finishing & methods of application (surface treatment, expose aggregate finish, applied finish, coloured finish), requirement of good finish.	PPT/Video/Hand written notes(PDF)	
		37	Curing of concrete : definition of curing, necessity of curing, different methods of curing and their application (spraying water, membrane curing, steam curing, curing by infra red radiations, curing by wet gunny bags, ponding methods).	PPT/Video/Hand written notes(PDF)	
		38	Waterproofing of concrete & joints in concrete construction: Importance & need of waterproofing, methods of waterproofing & materials used for waterproofing.	PPT/Video/Hand written notes(PDF)	
5 Extreme weather concreting & chemical Admixture in concrete	12	39	Types of joints, joining old & new concrete, methods of joining, materials used for filling joints.	PPT/Video/Hand written notes(PDF)	
		40	ASSIGNMENT 3 AND QUIZ 3 OF UNIT 3	PDF/Google form	
		41	Extreme weather concreting & chemical Admixture in concrete. Extreme weather concreting Effect of cold weather on concrete, effect of hot weather on concrete	PPT/Video/Hand written notes(PDF)	
	13	42	precautions to be taken while concreting in hot & cold weather condition.	PPT/Video/Hand written notes(PDF)	
		43	Chemical admixture in concrete Properties & application for different types of admixture such as accelerating admixtures, retarding admixtures	PPT/Video/Hand written notes(PDF)	
		44	water reducing admixture, air entraining admixture & super plasticizers.	PPT/Video/Hand written notes(PDF)	

6 Properties of Special concrete		45	ASSIGNMENT 5 AND QUIZ 5 OF UNIT 5	PDF/Google form	
	14	46	Properties, Advantages & Limitation of the following types of Special concrete i) Ready mix Concrete ii) Reinforced Concrete	PPT/Video/Hand written notes(PDF)	
		47	Properties, Advantages & Limitation of the following types of Special concrete:- iii) Prestressed Concrete iv) Fiber Reinforced Concrete	PPT/Video/Hand written notes(PDF)	
	15	48	ASSIGNMENT 6 AND QUIZ 6 OF UNIT 6	PDF/Google form	
	TOTAL	48			