Lesson Plan of CONCRETE TECHNOLOGY

4th Semester Civil Engineering

W W	Period	Theory Portion	W W	Practical
I	1	Introduction: Definition of concrete, properties of concrete, uses of concrete in comparison to other building materials	I,II	To determine the physical properties of cement such as fineness, consistency, setting time, soundness and compressive strength of cement as per IS Codes
	2	Advantages and disadvantages of concrete.	III	To determine flakiness at elongation Index of coarse aggregate
	3	Ingredients of Concrete: Cement: physical properties of cement; different types of cement as per IS Codes	IV	To determine silt content in fine aggregate
II	1	Aggregates: Classification of aggregates according to size and shape	V	Determination of specific gravity and water absorption of aggregates
	2	Characteristics of aggregates: Particle size and shape, surface texture, specific gravity of aggregate; bulk density, water absorption, surface moisture, bulking of sand, deleterious materials soundness	VI	Determination of bulk density and voids of aggregates
	3	Grading of aggregates: coarse aggregate, fine aggregate; All-in- aggregate; fineness modulus; interpretation of grading charts Water: Water Quality requirements as per IS:456-2000	VII	Determination of particle size distribution of fine, coarse and all-in-aggregate by sieve analysis (grading of aggregate)
III	1	Water Cement Ratio: Hydration of cement principle of water-cement ratio, Duff Abram's	VIII	To determine bulking of fine aggregates
	2	Water-cement ratio law: Limitations of water-cement ratio law	IX	To determine workability by slump test and to verify the effect of water, fine aggregate/coarse aggregate ratio and aggregate/Cement ratio on slump
	3	effects on strength of concrete	X	Compaction factor test for workability
IV	1	Properties of Concrete: Properties in plastic state: Workability, Segregation, Bleeding and Harshness	XI	Non destructive test on concrete by: Rebound Hammer Test
	2	Factors affecting workability, Measurement of workability: slump test, compacting factor and Vee Bee consistometer; Recommended slumps for placement in various conditions as per IS:456-2000/SP-23	XII	Non destructive test on concrete by: Ultrasonic Pulse Velocity Test
	3	Properties in hardened state: Strength, Durability	XIII	To determine compressive strength of concrete cubes for different grades of concrete
V	1	Properties in hardened state: Impermeability, Dimensional changes;	XIV	To determine compressive strength of concrete cubes for different grades of concrete
	2	Concrete Mix Design: Objectives of mix design	XV	To determine flexural strength of concrete beam
	3	introduction to various grades as per IS:456-2000; proportioning for nominal mix design as prescribed		

		by IS 456-2000		
VI	1	introduction to various grades as per IS:456-2000; proportioning for nominal mix design as prescribed by IS 456-2000		
	2	Adjustment on site for: Bulking of fine aggregate, water absorption of aggregate, workability		
	3	Difference between nominal and controlled concrete		
VII	1	Difference between nominal and controlled concrete		
	2	Introduction to IS-10262-2009-Code for controlled mix design.		
	3	Introduction to Admixtures (chemicals and minerals) for improving performance of concrete		
VIII	1	Introduction to Admixtures (chemicals and minerals) for improving performance of concrete		
	2	Special Concretes (only features)		
	3	Concreting under special conditions, difficulties and precautions before, during and after concreting: Cold weather concreting, Under water concreting, Hot weather concreting		
IX	1	Concreting under special conditions, difficulties and precautions before, during and after concreting: Cold weather concreting, Under water concreting, Hot weather concreting		
	2	Ready mix concrete		
	3	Fibre reinforced concrete		
X	1	Polymer Concrete		
	2	Fly ash concrete		
	3	Silica fume concrete		
XI	1	Concreting Operations: Storing of Cement: Storing of cement in a warehouse, Storing of cement at site		
	2	Storing of Cement: Effect of storage on strength of cement,Determination of warehouse capacity for storage of Cement		
	3	Storing of Aggregate: Storing of aggregate at site		
XII	1	Batching (to be shown during site visit) Batching of Cement, Batching of aggregate by: Volume, using gauge box (farma) selection of proper gauge box, Weight spring balances and batching machines Measurement of water		
	2	Mixing: Hand mixing, Machine mixing - types of mixers, capacities of mixers, choosing appropriate size of mixers, operation of mixers, Maintenance and care of mixers		
	3	Transportation of concrete: Transportation of concrete using: wheel barrows, transit mixers, chutes, belt conveyors, pumps, tower crane and hoists etc.		
XIII	1	Placement of concrete: Checking of form work, shuttering and precautions to be taken during placement		
	2	Compaction: Hand compaction, Machine compaction - types of vibrators, internal screed vibrators and form vibrators, Selection of		

		suitable vibrators for different situations		
	3	Finishing concrete slabs - screeding, floating and trowelling		
XIV	1	Curing: Objective of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing Duration for curing and removal of form work		
	2	Jointing: Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location		
	3	Defects in concrete: Identification of defects and methods of removing defects		
XV	1	Importance and methods of non-destructive tests (introduction only)		
	2	Rebound Hammer Test, Pulse Velocity method		
	3	Class Test and Discussion		

Lesson Plan of PUBLIC HEALTH ENGINEERING

4th Semester Civil Engineering

W W	Period	Theory Portion	W W	Practical
I	1	A. WATER SUPPLY Introduction, Necessity and brief description of water supply system	I	To determine turbidity of water sample
	2	Sources of water – surface/sub-surface sources	II	To determine dissolved oxygen of given sample
	3	Quantity of Water Water requirement	III	To determine pH value of water
	4	Rate of demand and variation in rate of demand	IV	To perform jar test for coagulation
II	1	Per capita consumption for domestic, industrial, public and fire fighting uses as per BIS standards (no numerical problems)	V	To determine BOD of given sample
	2	Per capita consumption for domestic, industrial, public and fire fighting uses as per BIS standards (no numerical problems)	VI	To determine residual chlorine in water
	3	Population Forecasting	VII	To determine conductivity of water and total dissolved solids
	4	Population Forecasting	VIII	To study the installation of following: Water meter
III	1	Quality of Water: Meaning of pure water and methods of analysis of water	IX	Connection of water supply of building with main
	2	Physical, Chemical and bacteriological tests and their significance	X	Pipe valves and bends
	3	Standard of potable water as per Indian Standard	XI	Water supply and sanitary fittings
	4	Maintenance of purity of water	XII	To study and demonstrate the joining/tPeriodseading of GI Pipes, CI Pipes, SWG pipes, PVC pipes and copper pipes.
IV	1	Water Treatment (brief introduction)	XIII	To demonstrate the laying of SWG pipes for sewers
	2	Sedimentation - purpose, types of sedimentation tanks	XIV	Study of water purifying process by visiting a field lab
	3	Coagulation/floculation - usual coagulation and their feeding	XV	Demonstration of plumbing tools.
	4	Filtration - significance, types of filters, their suitability		
V	1	Necessity of disinfection of water, forms of chlorination, break point chlorine, residual chlorine, application of chlorine.		
	2	Necessity of disinfection of water, forms of chlorination, break point chlorine, residual chlorine, application of chlorine.		
	3	Flow diagram of different treatment units, functions of (i) Areation fountain (ii) mixer (iii) floculator, (iv) classifier, (v) slow and rapid sand filters (vi) chlorination chamber.		
	4	Flow diagram of different treatment units, functions of (i) Areation fountain (ii) mixer (iii) floculator, (iv) classifier, (v) slow and rapid sand filters (vi) chlorination chamber.		

VI	1	Conveyance of Water Different types of pipes - cast iron, PVC, steel, asbestos cement concrete and lead pipes			
	2	Conveyance of Water Different types of pipes - cast iron, PVC, steel, asbestos cement concrete and lead pipes			
	3	Their suitability and uses, types of joints in different types of pipes.			
	4	Appurtenances: Sluice, air, reflux valves, relief valves, scour valves, bib cocks, stop cocks, fire hydrants, water meters their working and uses			
VII	1	Appurtenances: Sluice, air, reflux valves, relief valves, scour valves, bib cocks, stop cocks, fire hydrants, water meters their working and uses			
	2	Laying of Pipes: Setting out alignment of pipes, Excavation for laying of pipes and precautions to be taken			
	3	Handling, lowering and jointing of pipes, Testing of pipe lines, Back filling			
	4	Handling, lowering and jointing of pipes, Testing of pipe lines, Back filling			
VIII	1	Building Water Supply: Connections to water main (practical aspect only)			
	2	Water supply fittings (with sketches) and terminology related to plumbing			
	3	B. WASTE WATER ENGINEERING Introduction: Purpose of sanitation, Necessity of systematic collection and disposal of waste			
	4	Definition of terms in sanitary engineering, Collection and conveyance of sewage			
IX	1	Conservancy and water carriage systems, their advantages and Disadvantages			
	2	(a) Surface drains (only sketches) : various types, suitability (b) Types of sewage: Domestic, industrial, storm water and its seasonal variation			
	3	Sewerage System: Types of sewerage systems, materials for sewers, their sizes and joints			
	4	Sewerage System: Types of sewerage systems, materials for sewers, their sizes and joints			
X	1	Appurtenance: Location, function and construction features. Manholes, drop manholes, tank hole, catch basin, inverted siphon, flushing tanks grease and oil traps, storm regulators, ventilating shafts			
	2	Appurtenance: Location, function and construction features. Manholes, drop manholes, tank hole, catch basin, inverted siphon, flushing tanks grease and oil traps, storm regulators, ventilating shafts			
	3	Laying and Construction of Sewers: Setting out/alignment of sewers			
	4	Excavations, checking the gradient with boning rods preparation of bedding, handling and jointing testing and back filling of sewers/pipes.			
XI	1	Excavations, checking the gradient with boning rods preparation of bedding, handling and jointing testing and back filling of sewers/pipes.			
	2	Excavations, checking the gradient with boning rods preparation of bedding, handling and jointing testing and back filling of sewers/pipes.			

	3	Construction of surface drains and different sections required		
	4	Sewage Characteristics: Properties of sewage and IS standards for analysis of sewage		
XII	1	Sewage Characteristics: Properties of sewage and IS standards for analysis of sewage		
	2	Physical, chemical and bacteriological parameters		
	3	Natural Methods of Sewerage Disposal		
	4	General composition of sewage and disposal methods		
XIII	1	Disposal by dilution, Self purification of stream		
	2	Disposal by land treatment, Nuisance due to disposal		
	3	Sewage Treatment: Meaning and principle of primary and secondary treatment and activated sludge process their flow diagrams		
	4	Introduction and uses of screens		
XIV	1	grit chambers, detritus tanks, skimming tanks, plainsedimentation tanks, primary clarifers, secondary clarifers		
	2	filters, control beds, intermittent sand filters, trickling filters		
	3	sludge treatment and disposal, oxidation ponds (Visit to a sewage treatment plant)		
	4	sludge treatment and disposal, oxidation ponds (Visit to a sewage treatment plant)		
XV	1	Building Drainage: Aims of building drainage and its requirements		
	2	Building Drainage: Aims of building drainage and its requirements		
	3	Different sanitary fittings and installations, Traps		
	4	Different sanitary fittings and installations, Traps		

Lesson Plan of IRRIGATION ENGINEERING
4th Semester Civil Engineering

W W	Period	Theory Portion
I	1	Introduction: Definition of irrigation, Necessity of irrigation
	2	History of development of irrigation in India, Major, medium and minor irrigation projects
	3	Water Requirement of Crops: Principal crops in India and their water requirements
II	1	Crop seasons – Kharif and Rabi
	2	Soil water, soil crop and crop water relationships, Duty, Delta and Base Period, their relationship
	3	Gross commanded area (GCA), culturable commanded area (CCA), Intensity of Irrigation, Irrigable area
III	1	Hydrological Cycle Catchment Area and Run-off: Rainfall , definition rain-gauges – automatic and non-automatic
	2	methods of estimating average rainfall (Arithmatic system); catchment area runoff
	3	factors affecting runoff, hydrograph, basic concept of unit hydrograph.
IV	1	Methods of Irrigation: Flow irrigation - its advantages and limitations
	2	Lift Irrigation – Tubewell, submersible and well irrigation advantages and disadvantages
	3	Sprinkler irrigation conditions favourable and essential requirements for sprinkler irrigation, sprinkler system – classification and component parts
V	1	Drip irrigation, suitability of drip irrigation, layout, component parts, advantages
	2	Canals: Classification, apurtenancs of a canal and their functions
	3	sketches of different canal cross-sections
VI	1	Various types of canal lining - their related advantages and disadvantages, sketches of different lined canal x-sections
	2	Breaches and their control
	3	Maintenance of lined and unlined canals
VII	1	Tube Well Irrigation: Introduction, occurrence of ground water, location and command, advantages and disadvantages, comparison with canal irrigation
	2	Tube wells, explanation of terms: water table, radius of influence, depression head, cone of depression, confined and unconfined aquifers. Yield of a well and methods of determining yield of well
	3	Tube wells, explanation of terms: water table, radius of influence, depression head, cone of depression, confined and unconfined aquifers. Yield of a well and methods of determining yield of well
VIII	1	Types of tube wells and their choice-cavity, strainer and slotted type
	2	Method of boring, installation of well assembly, development of well, pump selection and installation and maintenance
	3	Water Harvesting Techniques: Need and requirement of various methods, Run-off from roof top and ground surface, construction of recharge pits and recharge wells and their maintenance.
IX	1	Dams: Classification of dams; earth dams - types, causes of failure; cross-section of zoned earth dam
	2	method of construction, gravity dams – types, cross-sections of a dam, method of construction
	3	Concept of small and micro dams
X	1	Concept of spillways and energy dissipators
	2	Canal Head Works and Regulatory Works: Definition, object, general layout
	3	functions of different parts of head works
XI	1	Difference between weir and barrage
	2	Cross Drainage Works: Functions and necessity of the following types: aqueduct, super passage, level crossing, inlet and outlet
	3	Cross Drainage Works: Functions and necessity of the following types: aqueduct, super passage, level crossing, inlet and outlet
XII	1	Cross Drainage Works: Functions and necessity of the following types: aqueduct, super passage, level crossing, inlet and outlet
	2	Sketches of the above cross drainage works

	3	Definitions of following Hydraulic Structures with Sketches: Falls
XIII	1	Cross and head regulators
	2	Outlets, Canal Escapes
	3	River Training Works: Methods of river training, guide banks, retired (levees) embankments, groynes and spurs, pitched island, cut-off
XIV	1	River Training Works: Methods of river training, guide banks, retired (levees) embankments, groynes and spurs, pitched island, cut-off
	2	River Training Works: Methods of river training, guide banks, retired (levees) embankments, groynes and spurs, pitched island, cut-off
	3	Water Logging and Drainage and Ground Water Re-charge: Definition of water logging – its causes and effects, detection, prevention and remedies
XV	1	Surface and sub-surface drains and their layout
	2	Concept and various techniques used for ground water re-charge
	3	Concept and various techniques used for ground water re-charge

Lesson Plan of SURVEYING – II

4th Semester Civil Engineering

W W	Period	Theory Portion	W W	Practical
I	1	Contouring: Concept of contours, purpose of contouring	I	Contouring: Preparing a contour plan by radial line method by the use of a Tangent Clinometer/Tachometer
	2	contour interval and horizontal equivalent, factors effecting contour interval, characteristics of contours	II	Preparing a contour plan by method of squares
II	1	methods of contouring: Direct and indirect, use of stadia measurements in contour survey, interpolation of contours	III	Preparing a contour plan of a Road/Railway track/Canal by taking cross sections.
	2	use of contour map, Drawing cross section from a contour map; marking alignment of a road, railway and a canal on a contour map	IV	Theodolite: Taking out the Theodilite, mounting on the tripod and placing it back in the box
III	1	computation of earth work and reservoir capacity from a contour map	V	Study of a transit vernier theodolite; temporary adjustments of theodolite
	2	Theodolite Surveying: Working of a transit vernier theodolite, axes of a theodolite and their relation; temporary adjustments of a transit theodolite	VI	Reading the vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods
IV	1	concept of transiting, swinging, face left, face right and changing face	VII	Measurement of vertical angles and use of tachometric tables Measurement of magnetic bearing of a line
	2	measurement of horizontal and vertical angles. Prolonging a line (forward and backward) measurement of bearing of a line;	VIII	Running a closed traverse with a theodolite (at least five sides) and its plotting
V	1	traversing by included angles and deflection angle method; traversing by stadia measurement, theodolite triangulation, plotting a traverse;	IX	Height of objects with and without accessible bases
	2	concept of coordinate and solution of omitted measurements (one side affected)	X	Curves: Setting out of a simple circular curve with given data by the following methods a) Offsets from the chords produced b) One theodolite method
VI	1	errors in theodolite survey and precautions taken to minimize them; limits of precision in theodolite traversing.	XI	Curves: Setting out of a simple circular curve with given data by the following methods a) Offsets from the chords produced b) One theodolite method
	2	errors in theodolite survey and precautions taken to minimize them; limits of precision in theodolite traversing	XII	Minor instruments: Demonstration and use of minor instruments like Ceylon Ghat Tracer, Tangent Clinometer, Pantagraph, Abney level etc.
VII	1	Height of objects – accessible and non-accessible bases	XIII	Use of planimeter for computing areas
	2	Tacho-metric surveying: Tachometry	XIV	Demonstration of digital instruments Periodic field visits to Survey of India and other government agencies.
VIII	1	Instruments to be used in tachometry	XV	To plot an area with the help of Total Station
	2	methods of tachometry		
IX	1	stadia system of tachometry		
	2	general principles of stadia tachometry		
X	1	examples of stadia tachometry and Numerical problems.		

	2	Curves: Simple Circular Curve:		
XI	1	Need and definition of a simple circular curve		
	2	Elements of simple circular curve - Degree of the curve, radius of the curve		
XII	1	tangent length, point of intersection (Apex point), tangent point, length of curve, long chord deflection angle, Apex distance and Mid-ordinate. Setting out of simple		
	2	circular curve: By linear measurements only: Offsets from the tangent, Successive bisection of arcs, Offsets from the chord produced By tangential angles using a theodolite		
XIII	1	Transition Curve: Need (centrifugal force and super elevation) and definition of transition curve; requirements of transition curve		
	2	length of transition curve for roads; by cubic parabola; calculation of offsets for a transition curve; setting out of a transition curve by tangential offsets only		
XIV	1	Vertical curve: Setting out of a vertical curve		
	2	Introduction to the use of Modern Surveying equipment and techniques such as: EDM or Distomat, Planimeter (Digital)		
XV	1	Total station, Introduction to remote sensing and GPS		
	2	Auto level, Digital theodolite		

Lesson Plan of STRUCTURAL MECHANICS

4th Semester Civil Engineering

W W	Period	Theory Portion	W W	Practical
I	1	Properties of Materials: Classification of materials, elastic materials, plastic materials	I	Determination of yield stress, ultimate stress
	2	ductile materials, brittle materials.	II	Determination of yield stress, ultimate stress
	3	Introduction to tensile test, compressive test, impact test, fatigue test, torsion test on metals.	III	percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel
	4	Introduction to tensile test, compressive test, impact test, fatigue test, torsion test on metals.	IV	percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel
II	1	Simple Stresses and Strains: Concept of stress, normal and shear stresses	V	Testing of HYSD Steel
	2	Simple Stresses and Strains: Concept of stress, normal and shear stresses	VI	Testing of HYSD Steel
	3	Concept of strain and deformation, longitudinal and transverse strain, poisson's ratio, volumetric strain	VII	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
	4	Concept of strain and deformation, longitudinal and transverse strain, poisson's ratio, volumetric strain	VIII	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
III	1	Hooke's law, modulii of elasticity and rigidity	IX	Determination of Young's modulus of elasticity for steel wire with searl's apparatus
	2	Bulk modulus of elasticity, relationship between the elastic constants.	X	Determination of modulus of rupture of a concrete beam
	3	Stresses and strains in bars subjected to tension and compression. Extension of uniform bar under its own weight	XI	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
	4	stress produced in compound bars (two or tPeriodsee) due to axial load.	XII	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
IV	1	Stress-strain diagram for mild steel and HYSD steel	XIII	Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
	2	mechanical properties, factor of safety.	XIV	Verification of forces in a framed structure
	3	Temperature stresses and strains	XV	Verification of forces in a framed structure
	4	Temperature stresses and strains		
V	1	Shear Force and Bending Moment: Concept of a beam and supports (Hinges, Roller and Fixed)		
	2	Shear Force and Bending Moment: Concept of a		

		beam and supports (Hinges, Roller and Fixed)		
	3	types of beams: simply supported, cantilever, propped, over hang, cantilever and continuous beams (only concept).		
	4	types of beams: simply supported, cantilever, propped, over hang, cantilever and continuous beams (only concept).		
VI	1	types of loading (point, uniformly distributed and uniformly varying loads)		
	2	types of loading (point, uniformly distributed and uniformly varying loads)		
	3	Concept of bending moment and shear force, sign conventions		
	4	Concept of bending moment and shear force, sign conventions		
VII	1	Bending Moment and shear force diagrams for cantilever		
	2	simply supported and overhanging beams subjected to concentrated		
	3	uniformly distributed		
	4	Relationship between load, shear force and bending moment		
VIII	1	Relationship between load, shear force and bending moment		
	2	point of maximum bending moment, and point of contraflexure.		
	3	point of maximum bending moment, and point of contraflexure.		
	4	Moment of Inertia: Concept of moment of inertia and second moment of area and radius of gyration		
IX	1	theorems of parallel and perpendicular axis		
	2	second moment of area of common geometrical sections: rectangle, triangle, circle (without derivations).		
	3	Second moment of area for L, T and I sections, section modulus.		
	4	Bending Stresses in Beams: Concept of pure/simple bending		
X	1	Bending Stresses in Beams: Concept of pure/simple bending		
	2	Assumptions made in the theory of simple bending, derivation and application of bending equation to circular cross-section, I section, T&L sections only		
	3	Assumptions made in the theory of simple bending, derivation and application of bending equation to circular cross-section, I section, T&L sections only		
	4	Moment of resistance		
XI	1	Calculations of bending stresses in simply supported beam		
	2	Shear Stresses in Beams: Concept of shear stresses in beams		
	3	shear stress distribution in rectangular		
	4	circular I, T, L sections for S.S. beams and Portland		
XII	1	circular I, T, L sections for S.S. beams and Portland		
	2	Slope and Deflection: Determination of slope		

		and deflection using Moment Area		
	3	Slope and Deflection: Determination of slope and deflection using Moment Area		
	4	Theorem for simply supported beam for pointed load and U.D.L.(no derivation, numerical problems)		
XIII	1	Theorem for simply supported beam for pointed load and U.D.L.(no derivation, numerical problems)		
	2	Theorem for simply supported beam for pointed load and U.D.L.(no derivation, numerical problems)		
	3	Columns: Theory of columns		
	4	Columns: Theory of columns		
XIV	1	Problem solving using Eulers and Rankine Formula		
	2	Problem solving using Eulers and Rankine Formula		
	3	Analysis of Trusses: Concept of a perfect, redundant and deficient frames		
	4	Analysis of Trusses: Concept of a perfect, redundant and deficient frames		
XV	1	Analysis of Trusses: Concept of a perfect, redundant and deficient frames		
	2	Assumptions and analysis of trusses by: Method of joints		
	3	Method of sections		
	4	Method of sections		

Lesson Plan of PUBLIC HEALTH AND IRRIGATION ENGINEERING DRAWING

4th Semester Civil Engineering

W W	Period	Practical
I	1,2,3	WATER SUPPLY AND WASTE WATER ENGINEERING DRAWING Drains and Sewers: Cross section of standard types of open drains (circular, V-shaped and U-shaped) with their foundations
II	1,2,3	Cross section of earthen ware and RCC sewer pipes Cross sections of masonry sewers (circular and egg shaped)
III	1,2,3	Traps, manholes and inspection chamber: Detailed section of floor trap and gully trap
IV	1,2,3	Detailed plan and section of an inspection chamber, Detailed plan and section of a manhole
V	1,2,3	Septic Tank and Soak Pit: Detailed plan and cross sections of a domestic septic tank with soak pit for 5-10 users
VI	1,2,3	Bath room and W.C connections: Cross-section tPeriodsough the external wall of lavatories at ground and first floor showing the one and two pipe system and the connections of the lavatory to inspection chamber
VII	1,2,3	Plan of a batPeriodsoom showing positions of lavatory, bath tub, wash-basin, taps and showers
VIII	1,2,3	Draw sectional elevation of a two storeyed building showing details of one pipe and two pipes systems with sanitation system
IX	1,2,3	Practice of reading water supply and sanitary engineering working drawings (PWD/urban Development agencies) including hot water and cold water supply system of a two room set.
X	1,2,3	IRRIGATION ENGINEERING DRAWING: Typical cross-section of a channel, L-section of a channel for given data
XI	1,2,3	Typical cross section of an unlined and lined channel in cutting, partly cutting and partly filling and fully in filling with given design data
XII	1,2,3	Layout plan of a canal head works, Draw the typical L-section of a weir
XIII	1,2,3	Draw the X-section of an Earthen Dam: Homogeneous, Zoned type, DiapPeriodsagm type
XIV	1,2,3	Cross section of a tube well
XV	1,2,3	Layout and cross section of rain water harvesting system

Lesson Plan of REINFORCED CONCRETE DESIGN

4th Semester Civil Engineering

W W	Period	Theory Portion
I	1	Introduction: Concept of Reinforced Cement Concrete (RCC)
	2	Reinforcement Materials: Suitability of steel as reinforcing material, Properties of mild steel and HYSD steel
	3	Loading on structures as per IS: 875
	4	Introduction to following methods of RCC design: Working stress method: Definition and basic assumptions
II	1	Limit state method: Definition and basic assumptions
	2	Shear and Development Length: Shear as per IS:456-2000 by working stress method
	3	Shear strength of concrete without shear reinforcement
	4	Maximum shear stress, Shear reinforcement
III	1	Concept of Limit State Method: Definitions and assumptions made in limit state of collapse (flexure)
	2	Concept of Limit State Method: Definitions and assumptions made in limit state of collapse (flexure)
	3	Partial factor of safety for materials
	4	Partial factor of safetyfor loads
IV	1	Design loads
	2	Stress block, parameters
	3	Stress block, parameters
	4	Singly Reinforced beam: Theory and design of singly reinforced beam by Limit State Method
V	1	Singly Reinforced beam: Theory and design of singly reinforced beam by Limit State Method
	2	Singly Reinforced beam: Theory and design of singly reinforced beam by Limit State Method
	3	Singly Reinforced beam: Theory and design of singly reinforced beam by Limit State Method
	4	Doubly Reinforced Beams: Theory and design of simply supported doubly reinforced rectangular beam by Limit State Method
VI	1	Doubly Reinforced Beams: Theory and design of simply supported doubly reinforced rectangular beam by Limit State Method
	2	Doubly Reinforced Beams: Theory and design of simply supported doubly reinforced rectangular beam by Limit State Method
	3	Doubly Reinforced Beams: Theory and design of simply supported doubly reinforced rectangular beam by Limit State Method
	4	Doubly Reinforced Beams: Theory and design of simply supported doubly reinforced rectangular beam by Limit State Method
VII	1	Behaviour of T beam
	2	inverted T beam
	3	isolated T beam and 'L' beams (No Numericals)
	4	isolated T beam and 'L' beams (No Numericals)
VIII	1	isolated T beam and 'L' beams (No Numericals)
	2	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
	3	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
	4	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
IX	1	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
	2	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
	3	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method

	4	One Way Slab: Theory and design of simply supported one way slab including sketches showing reinforcement details (plan and section) by Limit State Method
X	1	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
	2	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
	3	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
	4	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
XI	1	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
	2	Two Way Slab: Theory and design of two-way simply supported slab with corners free to lift, no provisions for torsional reinforcement by Limit State Method including sketches showing reinforcement details (plan and two sections)
	3	Axially Loaded Column: Definition
	4	classification of columns
XII	1	classification of columns
	2	Effective length of column
	3	Effective length of column
	4	Effective length of column
XIII	1	Specifications for longitudinal and lateral reinforcement
	2	Specifications for longitudinal and lateral reinforcement
	3	Design of axially loaded square, rectangular and circular short columns by Limit State Method including sketching of reinforcement(sectional elevation and plan)
	4	Design of axially loaded square, rectangular and circular short columns by Limit State Method including sketching of reinforcement(sectional elevation and plan)
XIV	1	Design of axially loaded square, rectangular and circular short columns by Limit State Method including sketching of reinforcement(sectional elevation and plan)
	2	Pre-stressed Concrete: Concept of pre-stressed concrete
	3	Pre-stressed Concrete: Concept of pre-stressed concrete
	4	Methods of pre-stressing : pre-tensioning and post-tensioning
XV	1	Methods of pre-stressing : pre-tensioning and post-tensioning
	2	Advantages and disadvantages of pre-stressing
	3	Advantages and disadvantages of pre-stressing
	4	Losses in pre-stress

Lesson Plan of SOFT SKILLS – II

4th Semester Civil Engineering

W W	Period	Practical
I	1,2	Concept of team building
II	1,2	behavior in a team
III	1,2	Developing Interpersonal Relations- empathy, sympathy
IV	1,2	Communication skills-improving non-verbal communication
V	1,2	Communication skills-improving non-verbal communication
VI	1,2	Conflict Management
VII	1,2	Motivation
VIII	1,2	Leadership
IX	1,2	Professional Ethics and Values
X	1,2	Health, Hygiene, Cleanliness and Safety
XI	1,2	Health, Hygiene, Cleanliness and Safety
XII	1,2	Sports
XIII	1,2	NCC/NSS
XIV	1,2	Camp – Environment awareness
XV	1,2	Cultural Event