

Lesson Plan (Even Semester)

Name of the Faculty : Pawan Kumar
Discipline : Civil Engg
Semester : 4th
Subject : Surveying-II(Theory and Practical)
Lesson Plan Duration : 15 weeks

****Work load (Lecture / Practical) per week(in hours): Lectures-03, practicals -06**


Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	Chapter1. Contouring Concept of contours	1st	Preparing a contour plan by radial line method by the use of a Tangent Clinometer/Tachometer
	2nd	Contour interval and horizontal equivalent, factors effecting contour interval, characteristics of contours	2nd	Preparing a contour plan by radial line method by the use of a Tangent Clinometer/Tachometer
2nd	3rd	Methods of contouring: Direct and indirect, use of stadia measurements in contour survey	3rd	Preparing a contour plan by method of squares
	4th	Interpolation of contours; use of contour map	4th	Preparing a contour plan by method of squares
3rd	5th	Computation of earth work and reservoir capacity from a contour map	5th	Preparing a contour plan of a Road/Railway track/Canal by taking cross sections.
	6th	Chapter2. Theodolite Surveying Working of a transit vernier theodolite, axes of a theodolite and their relation	6th	Preparing a contour plan of a Road/Railway track/Canal by taking cross sections.



4th	7th	Temporary adjustments of a transit theodolite; concept of transiting, swinging, face left, face right and changing face measurement of horizontal and vertical angles.	7th	Taking out the Theodolite, mounting on the tripod and placing it back in the box
	8th	Prolonging a line (forward and backward) measurement of bearing of a line; traversing by included angles and deflection angle method	8th	Taking out the Theodolite, mounting on the tripod and placing it back in the box
5th	9th	Traversing by stadia measurement, theodolite triangulation, plotting a traverse; concept of coordinate	9th	Study of a transit vernier theodolite; temporary adjustments of theodolite
	10th	Errors in theodolite survey and precautions taken to minimize them; limits of precision in theodolite traversing	10th	Study of a transit vernier theodolite; temporary adjustments of theodolite
6th	11th	Errors in theodolite Height of objects – accessible and non-accessible bases	11th	Reading the vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods
	12th	Revision Assignment No. 1: 1. Method of Contour. 2. Use of Contour. 3. Adjustment of Theodolite. 4. Method of Theodolite	12th	Reading the vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods
7th	13th	Sessional Test No. 1	13th	Measurement of vertical angles and use of tachometric tables
	14th	Chapter 3. Tachometric surveying Tachometry, Instruments to be used in tachometry	14th	Measurement of vertical angles and use of tachometric tables

8th	15th	Methods of tachometry, stadia system of tachometry, general principles of stadia tachometry	15th	Measurement of magnetic bearing of a line
	16th	Examples of stadiatachometry and Numerical problems.	16th	Measurement of magnetic bearing of a line
9th	17th	Chapter 4. Curves Need and definition of a simple circular curve; Elements of simple circular curve - Degree of the curve, radius of the curve, tangent length, point of intersection (Apex point)	17th	Running a closed traverse with a theodolite (at least five sides) and its plotting
	18th	Tangent point, length of curve, long chord deflection angle, Apex distance and Mid-ordinate. Setting out of simple	18th	Running a closed traverse with a theodolite (at least five sides) and its plotting
10th	19th	By linear measurements only and Offset from The Tangent	19th	Height of objects with and without accessible bases
	20th	Need (centrifugal force and super elevation) and definition of transition curve; requirements of transition curve; length of transition curve for roads; by cubic parabola;	20th	Height of objects with and without accessible bases
11th	21st	Calculation of offsets for a transition curve; setting out of a transition curve by tangential offsets only	21st	Setting out of a simple circular curve with given data by the following methods : Offsets from the chords produced
	22nd	Vertical curve Setting out of a vertical curve	22nd	Setting out of a simple circular curve with given data by the following methods : Offsets from the chords produced

12th	23rd	Revision Assignment No.2: 1. Tachometric Method. 2. Simple Curve . 3. Transition Curve 4. Setting out Vertical Curve.	23rd	Setting out of a simple circular curve with One theodolite method
	24th	Sessional Test No. 2	24th	Setting out of a simple circular curve with One theodolite method
13th	25th	Chapter 5. Introduction to the use of Modern Surveying equipment and techniques such as a) EDM or Distomat b) Planimeter	25th	Demonstration and use of minor instruments like Ceylon Ghat Tracer, Tangent Clinometer, Pantagraph, Abney level etc.
	26th	Total station, Introduction to remote sensing, GIS and GPS	26th	Demonstration and use of minor instruments like Ceylon Ghat Tracer, Tangent Clinometer, Pantagraph, Abney level etc.
14th	27th	Chapter 6 Minor Instruments Introduction and use of minor instruments like Ceylon Ghat Tracer, Clinometer, Pantagraph, Abney Level etc.	27th	Demonstration of digital instruments through field visits to Survey of India and other government agencies.
	28th	Use of planimeter for computing areas	28th	Demonstration of digital instruments through field visits to Survey of India and other government agencies.
15th	29th	Revision Assignment No. 3: 1. Explain EDM 2. Explain Total station. 3. Explain Remote Sensing 4. Pentagraph.	29th	Total Station (only demonstrations).
	30th	Sessional Test No. 3	30th	Total Station (only demonstrations).
Any additional available hours shall be used for revision				


 06/02/24

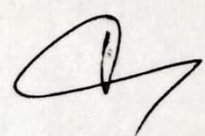
Gyan Ganga Polytechnic

Lesson Plan (Even Semester)

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Name of the Faculty : PAWAN KUMAR
 Discipline : Civil Engg.
 Semester : 4th
 Subject : WATER SUPPLY & WASTE WATER ENGG.
 Lesson Plan Duration : 15 weeks
 **Work load (Lecture / Practical) per week(in hours): Lectures-04, practicals -02

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	A. WATER SUPPLY Chapter 1st: Introduction	1st	To determine turbidity of water sample
	2nd	Chapter 2nd: Quantity of Water Water requirement, Rate of demand and variation in rate of demand		
	3rd	Per capita consumption for domestic, industrial, public and fire fighting uses as per BIS standards		
	4th	Population Forecasting		
	5th	Chapter 3rd: Quality of Water Meaning of pure water and methods of		
	6th	analysis of water		
2nd	7	Physical, Chemical and bacteriological tests and their significance	2nd	To determine dissolved oxygen of given sample
	8	Standard of potable water as per Indian Standard		
	9	Maintenance of purity of water (small scale and large scale quantity)		
	10	Revision		
	11	Chapter 4th: Water Treatment Sedimentation - purpose, types of		
	12	sedimentation tanks		
3rd	13	Coagulation flocculation - usual coagulation and their feeding	3rd	To determine pH value of water
	14	Filtration - significance, types of filters, their suitability		
	15	Necessity of disinfection of water, forms of chlorination, break point chlorine, residual chlorine, application of chlorine.		



	16	Flow diagram of different treatment units, functions of (i) Aeration fountain		
	17	(ii) mixer (iii) flocculator, (iv) classifier,		
	18	(v) slow and rapid sand filters (vi) chlorination chamber.		
		Revision		
		Assignment No 1		
4th	19	Sessional Test 1	4th	To perform jar test for coagulation
	20	Chapter 5th Conveyance of Water Different types of pipes - cast iron, PVC, steel, asbestos cement, concrete and lead pipes. Their suitability and uses		
	21	Types of joints in different types of pipes. Appurtenances: Sluice, air, reflux		
	22	valves, relief valves, scour valves, bib cocks		
	23	Distribution site: Requirement of distribution, minimum head and rate, methods of layout of distribution pipes		
	24	Systems of water supply - Intermittent and continuous service reservoirs - types, necessity and accessories.		
5th	25	Wastage of water - preventive measures, Maintenance of distribution system	5th	To determine BOD of given sample.
	26	Leakage detection in detail		
	27	Chapter 6th: Laying out Pipe Setting out alignment of pipes		
	28	Excavation for laying of pipes and precautions to be taken in laying pipes in		
	29	black cotton soil.		
	30	Testing of pipe lines, Back filling and use of boring rods		
6th	31	Chapter 7th. Building Water Supply Connections to water main (practical aspect only)	6th	To determine residual chlorine in water
	32	Water supply fixtures and installations and terminology related to plumbing		
	33	Revision		
	34	B. Waste Water Engineering Chapter 8. Introduction Purpose of sanitation		
	35	Necessity of systematic collection and		
	36	disposal of waste		

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7th	37	Definition of terms in sanitary	7th	To determine conductivity of water and total dissolved solids
	38	engineering, Collection and conveyance of sewage		
	39	Conservancy and water carriage systems, their advantages and Disadvantages		
	40	Surface drains (only sketches) : various types, suitability		
	41	Types of sewage: Domestic, industrial, storm water and its seasonal variation		
	42	Chapter 9th: Sewerage System Types of sewerage systems		
8th	43	Appurtenance: Location, function and construction features.	8th	To study the installation of Water meter
	44	Manholes, drop manholes, tank hole, catch basin,		
	45	Inverted siphon, flushing tanks grease and oil traps, storm		
	46	Chapter 10th. Laying and Construction of Sewers Setting out/alignment of sewers		
	47	Excavations, checking the gradient with boning rods preparation of bedding,		
	48	handling and jointing testing and back filling of sewers/pipes.		
9th	49	Construction of surface mains and different sections required	9th	To study the installation of Connection of water supply of building with main
	50	Revision Assignment No 2 1., function and construction features. Manholes, drop manholes, tank hole,		
	51	catch basin, inverted siphon, 2. Water supply fixtures and installations and terminology		
	52	Sessional Test 2		
	53	Chapter 11th Sewage characteristics: Properties of sewage		
	54	Revision		
10th	55	Chapter 12th. Natural Methods of Sewerage Disposal	10th	To study the installation of Pipe valves and bends and Water supply and sanitary fittings
	56	Disposal methods		
	57	Disposal by dilution		
	58	Disposal by land treatment		
	59	Nuisance due to disposal		
	60	Revision		

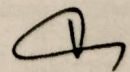
11th	61	Revision	11th	To study and demonstrate the joining/threading of GI Pipes, CI Pipes, SW pipes, D.I. pipes and PVC pipes.
	62	Chapter 13th. Sewage Treatment Meaning and principle of primary and secondary treatment		
	63	Activated sludge process their flow diagrams		
	64	Introduction and uses of screens, grit		
	65	chambers		
	66	Detritus tanks		
12th	67	Skimming tanks	12th	To demonstrate the laying of SW pipes for sewers
	68	Plainsedimentation tanks		
	69	Primary clarifiers		
	70	Secondary clarifiers		
	71	Filters		
13th	72	Control beds	13th	Study of water purifying process by visiting a field lab.
	73	Intermittent sand filters		
	74	Trickling filters		
	75	Sludge treatment and disposal		
	76	Oxidation ponds		
14th	77	Revision	14th	To test house drainage
	78	Chapter 14th. Building Drainage		
	79	Aims of building drainage		
	80	Building drainage requirements		
	81	Different sanitary fittings		
	82	Sanitary fittings installations		
15th	83	Traps, seals	15th	Revision
	84	Causes of breaking seals		
	85	Revision		
	86	Assignment No 3		
	87	1. Disposal methods		
	88	2. Filters		
	89	Revision		
	90	Sessional Test No. 3		
Any additional available hours shall be used for revision				

(Signature of the teacher concerned with date)

06/02/24

GYAN GANGA POLYTECHNIC
LESSON PLAN

Name of teacher		PAWAN KUMAR	
Discipline		: Civil Engg.	
Semester		: 4TH SEMESTER	
Subject		: SOIL & FOUNDATION ENGG	
Lesson Plan Duration		: 15 weeks	
		Practical	
Week	Theory		Practical Day
	Lecture Day	Topic (including assignment / test)	
1.	1.	1. Introduction: 1.1 Importance of soil studies in Civil Engineering, Scope of Soil Mechanics in Civil Engg.	1.
	2.	1.2 Geological origin of soils, soil profiles in India: residual and transported soil, alluvial deposits, lake deposits, local soil found in J&K, dunes and loess, glacial deposits, black cotton soils, conditions in which above deposits are formed.	
	3.	1.3 Names of organizations dealing with soil engineering work in India, soil map of India, classification of Soil as per major deposits in India.	
2.		2. Physical Properties of Soils: 2.1 Constituents of soil and phase diagram	2.
	1.	2.2 Definitions of void ratio, porosity, water content, degree of saturation, specific gravity, unit weight, bulk density/bulk unit weight, dry unit weight,	
	2.	saturated unit weight and submerged unit weight of soil grains and correlation between them	
	3.	2.3 Simple numerical problems on phase diagrams	
			1. To determine the Moisture content of a given sample of soil.
			2. Auger Boring and Standard Penetration Test a) Identifying the equipment and accessories b) Conducting boring and SPT at a given location c) Collecting soil samples and their identification d) Preparation of boring log and SPT graphs e) Interpretation of test results



	4	3. Classification and Identification of Soils 3.1. Particle size, shape and their effect on engineering properties of soil, particle size classification of soils 3.2 Gradation and its influence on engineering properties	3.	
3.	1.	3.3 Relative density and its use in describing cohesionless soils 3.4 Behaviour of cohesive soils with change in water content, Atterberg's limit - definitions, use and practical significance		3. Extraction of Disturbed and Undisturbed Samples a) Extracting a block sample b) Extracting a tube sample c) Extracting a disturbed samples for mechanical analysis. d) Field identification of samples
	2.	3.5 Field identification tests for soils 3.6 Soil classification system as per BIS 1498; basis, symbols, major divisions and sub divisions, groups, plasticity chart; procedure for classification of a given soil		
	3.	4. Flow of Water Through Soils: (04 hrs) 4.1 Concept of permeability and its importance 4.2 Darcy's law, coefficient of permeability, seepage velocity and factors affecting permeability		
		4.3 Comparison of permeability of different soils as per BIS	4.	
4.	1.	4.4 Measurement of permeability in the laboratory		4. Field Density Measurement (Sand Replacement and Core Cutter Method) a) Calibration of sand b) Conducting field density test at a given location c) Determination of water content d) Computation and interpretation of results
	2.	5. Effective Stress: (Concept only) 5.1 Stresses in subsoil 5.2 Definition and meaning of total stress, effective stress and neutral stress and their interrelationships.		
	3.	5.3 Principle of effective stress.	5.	
		5.4 Importance of effective stress in engineering problems		

5.	1.	REVISION	6.	5. Liquid Limit and Plastic Limit Determination: a) Identifying various grooving tools b) Preparation of sample c) Conducting the test d) Observing soil behaviour during tests e) Computation, plotting and interpretation of results
	2.	FIRST SESSIONAL		
	3.	6. Deformation of Soils 6.1 Meaning, conditions/situations of occurrence with emphasis on practical significance of: a) Consolidation and settlement b) Creep c) Plastic flow		
		d) Heaving e) Lateral movement f) Freeze and thaw of soil		
6.	1.	6.2 Definition and practical significance of compression index, coefficient of consolidation, degree of consolidation. 6.3 Meaning of total settlement, uniform settlement and differential settlement; rate of settlement and their effects	6.	6. Mechanical Analysis a) Preparation of sample b) Conducting sieve analysis c) Computation of results d) Plotting the grain size distribution curve e) Interpretation of the curve
	2.	6.4 Settlement due to construction operations and lowering of water table 6.5 Tolerable settlement for different structures as per BIS		
	3.	7. Shear Strength Characteristics of Soils: 7.1. Concept and Significance of shear strength		
		DO		
7.	1.	DO	7.	REVISION
	2.	7.2 Factors contributing to shear strength of cohesive and cohesion less soils, Coulomb's law and application in soil mechanics.		
	3.	7.3 Examples of shear failure in soils		
		DO	8.	7. Laboratory
8.	1.	DO		

	2.	8. Compaction: 8.1 Concept and necessity of compaction and consolidation.	9.	Compaction Tests (Standard Proctor Test) a) Preparation of sample b) Conducting the test c) Observing soil behaviour during test d) Computation of results and plotting e) Determination of optimum moisture content and maximum dry density
	3.	8.2 Laboratory compaction test (standard and modified proctor test as per BIS) definition and importance of optimum water content, maximum dry density; moisture dry density relationship for typical soils with different compactive efforts		
		8.3. Compaction control; Density control, measurement of field density by core cutter method and sand replacement method, moisture control, Proctor's needle and its use, thickness control, jobs of an embankment supervisor in relation to compaction		
9.	1.	9. Soil Exploration:	10.	8. Demonstration of Unconfined Compression Test a) Specimen preparation b) Conducting the test c) Plotting the graph d) Interpretation of results and finding/bearing capacity
		9.1 Purpose and necessity of soil exploration		
	2.	DO		
	3.	9.2 Reconnaissance, methods of soil exploration, Trial pits, borings (auger, wash, rotary, percussion to be briefly dealt)		
		DO		
10.	1.	9.3 Sampling; undisturbed, disturbed and representative samples; selection of type of sample; thin wall and piston samples; area ratio,	10.	REVISION
	2.	recovery ratio of samples and their significance, number and quantity of samples, resetting, Sealing and preservation of samples.		
	3.	9.4 Presentation of soil investigation results		

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Gyan Ganga Polytechnic, Heenga Kheri

Lesson-Plan

Name of Faculty		Er. Harpal Singh
Discipline		Computer Engineering/Civil Engg
Semester		4 th
Subject		MOOCS Elective (E-COMMERCE Technologies)
Week	Day	Theory Topic/Assignment/Test
1 st	1	Introduction to ELECTRONIC COMMERCE (E-Commerce)
	2	Categories and Frame-work of E-Commerce
2 nd	1	Advantages & Disadvantages of E-Commerce, Types of E-Commerce
	2	Threats and Features of E-Commerce
3 rd	1	Concept of Business Model of E-Commerce and E-Governance
	2	Different Types of Networking For E-Commerce: Concept of Internet with its applications
4 th	1	Concept of Wireless Application Protocol
	2	Anatomy of Convergence: Technological Convergence
5 th	1	Technology Implications and Collaborative Product Development
	2	Concept of Content Management System, Web Traffic and Content Marketing
6 th	1	Concept of Supply Chain Management: Introduction, Features and Components, Advantages and Disadvantages
	2	Introduction about E-Payment Systems, Types of E-Payment Systems
7 th	1	E-cash System and Electronic Checks
	2	Concept of Smart Cards & Electronic Payment Systems
8 th	1	Discussion of Electronic Payments Issues
	2	Introduction of Electronic Data Interchange (EDI)
9 th	1	Layered Architecture of EDI and its Applications
	2	Concept of EDI Protocols
10 th	1	Discussion about E-Marketing and Tele-Marketing
	2	Security Threats of E-Commerce
11 th	1	Security Requirements of E-Commerce
	2	Security Policies for E-Commerce
12 th	1	Concept of Enterprise Resource Planning (ERP)
	2	Functional areas and Benefits of ERP
13 th	1	Business Modules in ERP: Finance, Investment Management, Plant Maintenance
	2	Business Modules in ERP: Quality Management, Materials Management
14 th	1	Introduction of Enterprise application integration (EAI)
	2	Advantages and Disadvantages of EAI

Lesson Plan (4th Semester)

Name of Faculty : Ms. Pujjwal Mittal
Designation : Lecturer
Discipline : Common with Civil, Computer, Electrical, Mech
Semester : 4th
Subject : English & Communication Skills-II
Lesson Plan Duration: 15 Weeks (from February 2024 to June 2024)
Work Load(Lecture/Practical)per week(In hours): 02-Lectures / 02-Practicals

Week	Theory		Practical	
	Lecture Day	Topic(including assignment/Test)	Pract. Day	Topic
1st	1st	UNIT I Reading All The World's A Stage – W. Shakespeare	1	Reading:- Reading Practice of the above lessons in the Lab Activity classes.
	2nd	<ul style="list-style-type: none"> • Life Sketch of Dr. Abdul Kalam • The Portrait of a Lady - Khushwant Singh 	2	Comprehension exercises of unseen passages along with the given lessons.
2nd	1st	The Doctor's Word by R K Narayan	3	Vocabulary enrichment and grammar exercises based on the above selective readings..
	2nd	Speech by Dr Kiran Bedi at IIM Indore 2007 Leadership Concepts	4	Situational Conversation: Requesting and responding to requests; Expressing sympathy and condolence.
3rd	1st	The Bet - by Anton Chekov	5	Warning; Asking and giving information.
	2nd	Revision	6	
4th	1st	UNIT -II Effective Communication Skills Modern means of Communication (Video Conferencing, e- mail, Teleconferencing)	7	
	2nd	Effective Communication Skills: 7 C's of Communication	8	Getting and giving permission.
5th	1st	Non-verbal Communication – Significance, Types and Techniques for Effective Communication	9	Asking for and giving opinions.

	2nd	Barriers and Effectiveness in Listening Skills	10	A small formal and informal speech.
6th	1st	Barriers and Effectiveness in Speaking Skills	11	Seminar
	2nd	Revision/Test	12	Debate
7th	1st	UNIT III, Professional Writing	13	Practice
	2nd	<ul style="list-style-type: none"> Correspondence: Enquiry letters, placing orders, complaint letters Report Writing 	14	Practice
8th	1st	<ul style="list-style-type: none"> Memos Circulars 	15	Unseen Comprehension Passages and vocabulary enhancement.
	2nd	<ul style="list-style-type: none"> Press Release Inspection Notes and tips for Note-taking 	16	Interview Skills: Preparing for the Interview and guidelines for success in the Interview and significance of acceptable body-language during the Interview.
9th	1st	<ul style="list-style-type: none"> Corrigendum writing Cover Letter 	17	Written and Oral Drills will be undertaken in the class to facilitate holistic linguistic competency among learners.
	2nd	Drawing inferences	18	Participation in a GD, Functional and Non-functional roles in GD, case studies and role plays.
10th	1st	Revision/Assignment	19	Presentations, using audio-visual aids (including power-point).
	2nd	UNIT IV. Grammar and Vocabulary Prepositions	20	. Telephonic interviews, face to face interviews
11th	1st	Conjunctions	21	Presentations as Mode of Communication: Persuasive Presentations using multi-media aids
	2nd	Punctuation	22	Practice
12th	1st	<ul style="list-style-type: none"> Idioms and Phrases Pairs of words (Words commonly misused and confused) 	23	Practice
	2nd	Translation of Administrative and Technical Terms in Hindi or Mother	24	Practice

		tongue		
13th	1st	UNIT V Employability Skills. Presentation Skills: How to prepare and deliver a good presentation	24	Practice
	2nd	Telephone Etiquettes	26	Exercise
14th	1st	<ul style="list-style-type: none"> • Importance of developing employable and soft skills • Resume Writing: Definition, Kinds of Resume, Difference between Bio-data and Curriculum Vitae and Preparing a Resume for Job/ Internship 	27	Exercise
	2nd	<ul style="list-style-type: none"> • Group discussions: Concept and fundamentals of GD, and learning Group Dynamics. • Case Studies and Role Plays 	28	Exercise
15th	1st	Revision	29	Exercise
	2nd	Test	30	Exercise

LESSON PLAN

NAME OF FACULTY: PAWAN KUMAR

DISCIPLINE: CIVIL ENGINEERING

SEMESTER: IV

SUBJECT: IRRIGATION ENGINEERING

LESSON PLAN DURATION: 15 WEEKS

WORK LOAD LECTURE PER WEEK: 2 LECTURES

Week	Lecture day	Topics
1 st	1	UNIT I 1. Introduction: Irrigation Engineering, Hydrological Cycle, Run-off and Catchment Area
	2	1.1 Definition and necessity of irrigation 1.2 Major, medium and minor irrigation projects
2 nd	3	1.3 Hydrology and hydrological cycle 1.4 Rain-gauges – automatic and non-automatic (Symons rain gauge)
	4	1.5 Methods of estimating average rainfall (Arithmetic system) 1.6 Runoff and Factors affecting runoff, Catchment area 1.7 Hydrograph and basic concept of unit hydrograph.
3 rd	5	UNIT II 2. Water Requirement of Crops
	6	2.1 Principal crops in India and their water requirements 2.2 Crop seasons – Kharif and Rabi
4 th	7	2.3 Crop period, base period, Duty, Delta and their relationship.
	8	2.4 Gross commanded area (GCA), culturable commanded area (CCA), Intensity of Irrigation, Irrigable area
5 th	9	Revision of previous topics
	10	1 ST Sessional
6 th	11	3. Methods of Irrigation
	12	3.1 Flow irrigation – Definition and its types (only description) 3.2 Lift Irrigation – Tube well, Types of tube wells (only description)
7 th	13	3.3 Explanation of terms: water table, radius of influence, depression head, cone of depression, confined and unconfined aquifers, advantages and disadvantages of tube well irrigation.
	14	3.3 Explanation of terms: water table, radius of influence, depression head, cone of depression, confined and unconfined aquifers, advantages and disadvantages of tube well irrigation.
8 th	15	3.4 Sprinkler irrigation- Conditions favourable, Types and component parts, advantages and disadvantages of sprinkler irrigation.
	16	3.5 Drip irrigation- layout, component parts, advantages and disadvantages of drip irrigation.
9 th	17	UNIT III 4. Canals, Canal Head Works, Regulatory Works and Cross Drainage Works
	18	4.1 Definition and Classification of canal. (Visit to a Canal)

		**4.2 Appurtenances of a canal and their functions.
10 th	19	4.3 Various types of canal lining - their related advantages and disadvantages, 4.4 Canal breaches and their control.
	20	4.5 Maintenance of lined and unlined canals 4.6 Definition, objectives and general layout of different parts of head works.
11 th	21	4.7 Difference between weir and barrage **4.8 Definition and necessity of Cross Drainage Works (Visit to a Cross Drainage Works)
	22	**4.9 Concept of Aqueduct, super passage, level crossing, inlet and outlet.
12 th	23	Revision previous topics
	24	2 ND Sessional
13 th	25	5. Dams and hydraulic Structures 5.1 Dam and its Classification **5.2 Earth dams - types, causes of failure; cross-section of zoned earth dam, method of construction,
	26	**5.3 Gravity dams – types, cross-sections of a dam, method of construction 5.4 Concept of spillways and energy dissipaters 5.5 Concept of Canal Falls, Outlets and Escapes
14 th	27	UNIT V 6. River Training Works 6.1 Definition, function of river training works. 6.2 Types of river training- Embankments or levees.
	28	6.3 Concept of Guide bank, Groynes or spurs, Pitched island, Cut-off 7. Water Logging and Drainage and Ground Water Re-charge 7.1 Definition of water logging – its causes and effects. 7.2 Detection, prevention and remedies
15 th	29	7.3 Surface and sub-surface drains and their layout (only description) 7.4 Water Harvesting Techniques: Need and requirement. 7.5 Various methods of rain water harvesting.
	30	3 RD Sessional