

**LESSON PLAN FOR WINTER SESSION (2022-23)**

PROGRAMME : CIVIL ENGINEERING			NAME OF THE FACULTY: MR. ARABINDA SAHU
COURSE NAME : WATER SUPPLY AND WASTE WATER ENGINEERING			SESSION : 2022-23
COURSE CODE : TH.4			DATE : 15/09/22 To 22/12/22
SEMESTER : 5th			
PERIODS/WEEK: 5			
TOTAL PERIODS:65			
WEEK	PERIODS	UNITS	TOPICS
Sept. 3rd Week	1	1 of Sec. A	<b>SECTION A: WATER SUPPLY</b> 1. Introduction to Water Supply, Quantity and Quality of water 1.1 Necessity of treated water supply.
	2	1 of Sec. A	1.2 Per capita demand, variation in demand and factors affecting demand
	3	1 of Sec. A	1.3 Methods of forecasting population
	4	1 of Sec. A	Numerical problems using different methods for forecasting population
	5	1 of Sec. A	Numerical problems using different methods for forecasting population
Sept. 4th Week	1	1 of Sec. A	1.4 Impurities in water – organic and inorganic, Harmful effects of impurities
	2	1 of Sec. A	1.5 Analysis of water –physical, chemical and bacteriological 1.6 Water quality standards for different uses
	3	2 of Sec. A	<b>2. Sources and Conveyance of water</b> 2.1 Surface sources – Lake, stream, river and impounded reservoir
	4	2 of Sec. A	2.2 Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	5	2 of Sec. A	2.3 Yield from well- method s of determination, Numerical problems using yield formulae
Oct 1st Week	1		
	2		
	3		<b>Puja Holidays</b>
	4		
	5		
Oct 2nd Week	1	2 of Sec. A	2.4 Intakes – types, description of river intake, reservoir intake, canal intake 2.5 Pumps for conveyance & distribution – types, selection, installation.
	2	2 of Sec. A	2.6 Pipe materials – necessity, suitability, merits & demerits of each type
	3	2 of Sec. A	2.7 Pipe joints – necessity, types of joints, suitability, methods of jointing
	4	6 of Sec. B	<b>SECTION B: WASTE WATER ENGINEERING</b> <b>6. Introduction</b> 6.1 Aims and objectives of sanitary engineering
	5	6 of Sec. B	6.2 Definition of terms related to sanitary engineering 6.3 Systems of collection of wastes– Conservancy-Water Carriage System – features, comparison, suitability
Oct 3rd Week	1	6 of Sec. B	
	2	3 of Sec. A	<b>3. Treatment of water</b> 3.1 Flow diagram of conventional water treatment system
	3	3 of Sec. A	3.2 Treatment process / units : 3.2.1 Aeration ; Necessity
	4	3 of Sec. A	3.2.2 Plain Sedimentation : Necessity, working principles-Sedimentation tanks – types, essential features, operation & maintenance
	5	3 of Sec. A	3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier
Oct 4th Week	1	3 of Sec. A	3.2.4 Filtration : Necessity, principles, types of filters, Slow Sand Filter
	2	3 of Sec. A	Rapid Sand Filter and Pressure Filter – essential features
	3	3 of Sec. A	3.2.5 Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand.
	4	3 of Sec. A	Available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
	5	3 of Sec. A	3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method
Nov. 1st Week	1	7 of Sec. B	<b>7. Quantity and Quality of sewage</b> 7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, Numerical problem on computation quantity of sanitary sewage
	2	7 of Sec. B	7.2 Computation of size of sewer, application of Chazy's formula and Limiting velocities of flow : self-
	3	7 of Sec. B	7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
	4	7 of Sec. B	7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
	5	4 of Sec. A	<b>4. Distribution system And Appurtenance in distribution system:</b> 4.1 General requirements, types of distribution system-gravity, direct and combined.

Nov. 2nd Week	1	4 of Sec. A	4.2 Methods of supply – intermittent and continuous
	2	4 of Sec. A	4.3 Distribution system Layout – types, comparison, suitability
	3	4 of Sec. A	4.4 Valves-types, features, Purpose-slucie valves, check valves, air valves, Scour valves, Fire hydrants, Water meters
	4	8 of Sec. B	<b>8. Sewerage system</b> 8.1 Types of system-separate, combined, partially separate. Comparison between the types, suitability
	5	8 of Sec. B	8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability 8.3 Laying of sewer-setting out sewer alignment
Nov. 3rd Week	1		<b>Internal Assessment Exam</b>
	2	9 of Sec. B	<b>9.0 Sewer appurtenances and Sewage Disposal:</b> 9.1 Manholes and Lamp holes – types, features, location, function
	3	9 of Sec. B	9.2 Inlets, Grease & oil trap – features, location, function
	4	9 of Sec. B	9.3 Storm regulator, inverted siphon – features, location, function
	5	9 of Sec. B	9.4 Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
Nov. 4th Week	1	9 of Sec. B	9.4 Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	2	9 of Sec. B	9.5 Disposal by dilution – standards for disposal in different types of water bodies, self-purification of stream
	3	9 of Sec. B	9.5 Disposal by dilution – standards for disposal in different types of water bodies, self-purification of stream
	4	10 of Sec. B	<b>10. Sewage treatment :</b> 10.1 Principles of treatment, flow diagram of conventional treatment
	5	10 of Sec. B	10.2 Primary treatment – necessity, principles
Dec. 1st Week	1	10 of Sec. B	10.2 Primary treatment –essential features, functions
	2	10 of Sec. B	10.3 Secondary treatment – necessity, principles
	3	10 of Sec. B	10.3 Secondary treatment – essential features, functions
	4	5 of Sec. A	<b>5. W/s plumbing in building :</b> 5.1 Method of connection from water mains to building supply
	5	5 of Sec. A	5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
Dec. 2nd Week	1	11 of Sec. B	<b>11. Sanitary plumbing for building :</b> 11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	2	11 of Sec. B	11.2 Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	3	11 of Sec. B	11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphon age pipe
	4		<b>Doubt Clearing Class</b>
	5		<b>Doubt Clearing Class</b>
Dec. 3rd Week	1		<b>Doubt Clearing Class</b>
	2		<b>Previous year question Paper discussion.</b>
	3		<b>Previous year question Paper discussion.</b>
	4		<b>Previous year question Paper discussion.</b>
	5		<b>Previous year question Paper discussion.</b>

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