GANDHI SCHOOL OF ENGINEERING

BHABANDHA, BERHAMPUR

BRANCH- CIVIL ENGINEERING

SEMESTER- 5TH

SUBJECT- Th4. WATER SUPPLY AND WASTE WATER ENGINEERING

NAME OF THE FACULTY- ER. SWADHIN MUND

		Topic to be taken				Actual topic taken		
Sl. No	**Topic/ Module**	**No. of period**	**Details of the topics**	**Date**	**Topic No.**	**Topic Name**	**Date**	**Remarks**
SECTION A:WATER SUPPLY								
1	Introduction to Water Supply, Quantity and Quality of water	10	1.1 Necessity of treated water supply 1.2 Per capita demand, variation in demand and factors affecting demand 1.3 Methods of forecasting population, Numerical problems using different methods 1.4 Impurities in water 1.5 Analysis of water 1.6 Water quality standards for different uses	01.08.2023-12.08.2023	1.1 1.2 1.3 1.4 1.5 1.6	Necessity of treated water supply Per capita demand, variation in demand and factors affecting demand Methods of forecasting population, Numerical problems using different methods Impurities in water Analysis of water	01.08.2023 02.08.2023 03.08.2023 04.08.2023 05.08.2023 08.08.2023 09.08.2023 10.08.2023 11.08.2023 12.08.2023	
2	Sources and Conveyance of water	8	2.1 Surface sources – Lake, stream, river and impounded reservoir 2.2 Underground sources – aquifer type & occurrence 2.3 Yield from well 2.4 Intakes 2.5 Pumps for conveyance & distribution – types, selection, installation. 2.6 Pipe materials 2.7 Pipe joints	16.08.2023-25.08.2023	2.1 2.2 2.3 2.4 2.5 2.6 2.7	Surface sources – Lake, stream, river and impounded reservoir Underground sources – aquifer type & occurrence Yield from well Intakes Pumps for conveyance & distribution – types, selection, installation. Pipe materials Pipe joints	16.08.2023 17.08.2023 18.08.2023 19.08.2023 22.08.2023 23.08.2023 25.08.2023	

3	Treatment of water	12	1. Design of treatment units excluded. 2. Students may be asked to prepare detailed sketches of units, preferably from working drawing 3. Field visit to treatment plant, under practical should be arranged after covering this unit. 3.1 Flow diagram of conventional water treatment system 3.2 Treatment process / units 3.2.1 Aeration ; Necessity 3.2.2 Plain Sedimentation 3.2.3 Sedimentation with coagulation 3.2.4 Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter 3.2.5 Disinfection 3.2.6 Softening of water – Necessity, Methods of softening	26.08.2023- 15.09.2023	1 2 3 3.1 3.2 3.2.1 3.2.2 3.2.3 3.2.4 3.2.5 3.2.6	Design of treatment units excluded. Students may be asked to prepare detailed sketches of units, preferably from working drawing Field visit to treatment plant, under practical should be arranged after covering this unit. Flow diagram of conventional water treatment system Treatment process / units Aeration ; Necessity Plain Sedimentation Sedimentation with coagulation Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter Disinfection Softening of water – Necessity, Methods	26.08.2023 29.08.2023 31.08.2023 01.09.2023 02.09.2023 07.09.2023 09.09.2023 12.09.2023 13.09.2023 14.09.2023 15.09.2023	
4	Distribution system and Appurtenance in distribution system	8	4.1 General requirements, types of distribution system-gravity, direct and combined 4.2 Methods of supply 4.3 Distribution system layout 4.4 Valves-types, features, uses, purpose	16.09.2023- 29.09.2023	4.1 4.2 4.3 4.4	General requirements, types of distribution system-gravity, direct and combined Methods of supply Distribution system layout Valves-types, features, uses, purpose	16.09.2023 21.09.2023 22.09.2023 23.09.2023 26.09.2023 27.09.2023 29.09.2023 30.09.2023	
5	W/s plumbing in building	2	5.1 Method of connection from water mains to building supply 5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.	30.09.2023- 03.10.2023	5.1 5.2	Method of connection from water mains to building supply General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.	03.10.2023 04.10.2023	

SECTION B:WASTE WATER ENGINEERING								
6	Introduction	5	6.1 Aims and objectives of sanitary engineering 6.2 Definition of terms related to sanitary engineering 6.3 Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability	04.10.2023-10.10.2023	6.1 6.2 6.3	Aims and objectives of sanitary engineering Definition of terms related to sanitary engineering Systems of collection of wastes– Conservancy and Water Carriage System –	05.10.2023 06.10.2023 07.10.2023 10.10.2023 11.10.2023	
7	Quantity and Quality of sewage	7	7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage. 7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring 7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological 7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD	11.10.2023-31.10.2023	7.1 7.2 7.3 7.4	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage. Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD	12.10.2023 13.10.2023 17.10.2023 1810.2023 19.10.2023 31.10.2023 01.11.2023	
8	Sewerage system	5	8.1 Types of system-separate, combined, partially separate , features, comparison between the types, suitability 8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability 8.3 Laying of sewer-setting out sewer alignment	01.11.2023-07.11.2023	8.1 8.2 8.3	Types of system-separate, combined, partially separate , features, comparison between the types, suitability Shapes of sewer – rectangular, circular, avoid-features, suitability Laying of sewer-setting out sewer alignment	02.11.2023 03.11.2023 04.11.2023 07.11.2023 08.11.2023	

9	Sewer appurtenances and Sewage Disposal	7	9.1 Manholes and Lamp holes – types, features, location, function 9.2 Inlets, Grease & oil trap – features, location, function 9.3 Storm regulator, inverted siphon – features, location, function 9.4 Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies 9.5 Disposal by dilution – stand	08.11.2023-18.11.2023	9.1 9.2 9.3 9.4 9.5	anholes and Lamp holes – types, features, location, function Inlets, Grease & oil trap – features, location, function Storm regulator, inverted siphon – features, location, function Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies Disposal by dilution – stand	09.11.2023 10.11.2023 11.11.2023 16.11.2023 17.11.2023 18.11.2023 21.11.2023	
10	Sewage treatment	8	10.1 Principles of treatment, flow diagram of conventional treatment 10.2 Primary treatment – necessity, principles, essential features, functions 10.3 Secondary treatment – necessity, principles, essential features, functions	21.11.2023-30.11.2023	10.1 10.2 10.3	Principles of treatment, flow diagram of conventional treatment Primary treatment – necessity, principles, essential features, functions Secondary treatment – necessity, principles, essential features, functions	22.11.2023 23.11.2023 24.11.2023 25.11.2023 01.12.2023 02.12.2023 06.12.2023	
11	Sanitary plumbing for building	3	11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage 11.2 Plumbing arrangement of single storied & multi storied building as per I.S. code practice 11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, antisyphonage pipe	01.12.2023-06.12.2023	11.1 11.2 11.3	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage Plumbing arrangement of single storied & multi storied building as per I.S. code practice Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, antisyphonage pipe	07.12.2023 08.12.2023 09.12.2023	

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