LESSON PLAN OF 5TH SEMESTER CIVIL ENGINEERING(2023 -24)

Discipline :- CIVIL ENGG	Semester:-5TH	Name of the Teaching Faculty **SOUMYAKANTA SAHOO**
Subject:- Water Supply & Waste Water Engineering	No of Days/per Week Class Allotted :-05	Semester From:- **1st August 2023** To:- **30th November, 2023** No of Weeks:- **18**

Week	Class Day	Theory/ Practical Topics
1st	1st	**Introduction to Water Supply, Quantity and Quality** Necessity of treated water supply
	2nd	Per capita demand, variation in demand and factors affecting demand
	3rd	Methods of forecasting population
	4th	Numerical problems using different methods
	5th	Numerical problems using different methods
2nd	1st	Impurities in water – organic and inorganic, Harmful effects of impurities
	2nd	Analysis of water –physical, chemical and bacteriological
	3rd	Water quality standards for different uses
	4th	**Sources and Conveyance of water**: Surface sources – Lake, stream, river and impounded reservoir
	5th	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
3rd	1st	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
	2nd	Intakes – types, description of river intake, reservoir intake, canal intake
	3rd	Pumps for conveyance & distribution – types, selection, installation.
	4th	Pipe materials – necessity, suitability, merits & demerits of each type
	5th	Pipe joints – necessity, types of joints, suitability, methods of jointing
4th	1st	Laying of pipes – method
	2nd	**Treatment of water** Flow diagram of conventional water treatment system
	3rd	Treatment process /units: Aeration ; Necessity
	4th	Plain Sedimentation : Necessity, working principles

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	5th	Sedimentation tanks – types, essential features, operation & maintenan
5th	1st	Sedimentation with coagulation: Necessity, principles of coagulation, ty of coagulants
	2nd	Flash Mixer, Flocculator, Clarifier (Definition and concept only)
	3rd	Filtration : Necessity, principles, types of filters
	4th	Slow Sand Filter, Rapid Sand Filter
	5th	Pressure Filter – essential features
6th	1st	Disinfection : Necessity, methods of disinfection
	2nd	Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
	3rd	Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only
	4th	**Distribution system And Appurtenance in distribution system:** General requirements, types of distribution system
	5th	types of distribution system- direct and combined
7th	1st	Methods of supply – intermittent and continuous
	2nd	Distribution system layout – types, comparison, suitability
	3rd	Valves-types, features, uses
	4th	purpose-sluice valves, check valves, air valves, scour valves
	5th	Fire hydrants, Water meters
8th	1st	**W/s plumbing in building :** Method of connection from water mains to building supply
	2nd	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	3rd	**Introduction** Aims and objectives of sanitary engineering
	4th	Definition of terms related to sanitary engineering
	5th	Systems of collection of wastes– Conservancy and Water Carriage System
9th	1st	features, comparison, suitability
	2nd	**Quantity and Quality of sewage** Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow
	3rd	numerical problem on computation quantity of sanitary sewage.
	4th	
	5th	-------do--------
10th	1st	Computation of size of sewer, application of Chazy's formula
	2nd	Limiting velocities of flow : self-cleaning and scouring
	3rd	General importance, strength of sewage, Characteristics of sewage- physical, chemical & biological
	4th	Concept of sewage-sampling, tests for – solids, pH dissolved oxygen, BOD, COD

	5th	**Sewerage system** Types of system-separate, combined, partially separate
11th	1st	features, comparison between the types, suitability
	2nd	Shapes of sewer – rectangular, circular
	3rd	avoid-features, suitability
	4th	Laying of sewer-setting out sewer alignment
	5th	**Sewer appurtenances and Sewage Disposal:** Manholes -types, features, location, function
12th	1st	Lamp holes – types, features, location, function
	2nd	Inlets– features, location, function
	3rd	Grease & oil trap – features, location, function
	4th	Storm regulator, inverted siphon – features, location, function
	5th	Disposal on land – sewage farming, sewage application and dosing,
13th	1st	sewage sickness-causes and remedies
	2nd	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	3rd	**Sewage treatment :** Principles of treatment, flow diagram of conventional treatment
	4th	-------do--------
	5th	Primary treatment – necessity, principles, essential features, functions
14th	1st	-------do--------
	2nd	Secondary treatment – necessity, principles, essential features, functions
	3rd	-------do--------
	4th	**Sanitary plumbing for building :** Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	5th	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
15th	1st	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets,
	2nd	flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
	3rd	PREVIOUS YEAR QUESTION PRACTICE
	4th	PREVIOUS YEAR QUESTION PRACTICE
	5th	DOUBT CLEARING CLASS
16th	1st	PREVIOUS YEAR QUESTIONS PRACTICE
	2nd	PREVIOUS YEAR QUESTIONS PRACTICE
	3rd	PREVIOUS YEAR QUESTIONS PRACTICE
	4th	PREVIOUS YEAR QUESTIONS PRACTICE
17th	1st	PREVIOUS YEAR QUESTIONS PRACTICE
	2nd	PREVIOUS YEAR QUESTIONS PRACTICE

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	3rd	PREVIOUS YEAR QUESTIONS PRACTICE
	4th	PREVIOUS YEAR QUESTIONS PRACTICE
18th	1st	PREVIOUS YEAR QUESTIONS PRACTICE
	2nd	PREVIOUS YEAR QUESTIONS PRACTICE
	3rd	PREVIOUS YEAR QUESTIONS PRACTICE
	4th	PREVIOUS YEAR QUESTIONS PRACTICE

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