

Discipline: CIVIL	Semester: 5 th 2023-24	Name of the Teaching Faculty: DIBYAJYOTI DASH
Subject: WATER SUPPLY & WASTE WATER ENGG.	No. of Days/per week class allotted: 05	Semester From Date: 01.08.2023 To Date: 30.11.2023 No. of Weeks : 15
Week	Class Day	Theory Topics
1 st	01	Per capita demand, variation in demand and factors affecting demand
	02	Methods of forecasting population, Numerical problems using different methods
	03	Impurities in water – organic and inorganic, Harmful effects of impurities
	04	Analysis of water –physical, chemical and bacteriological
	05	Water quality standards for different uses
2 nd	01	Surface sources – Lake, stream, river and impounded reservoir
	02	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	03	Yield from well- method s of determination, Intakes – types
	04	Pumps for conveyance & distribution
	05	Pipe materials , pipe joints
3 rd	01	Treatment of water , Flow diagram of conventional water treatment system , Treatment process / units
	02	Treatment process / units , aeration.
	03	Plain Sedimentation : Necessity, working principles
	04	Sedimentation tanks – types, essential features, operation & maintenance
	05	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants
4 th	01	Flash Mixer, Flocculator, Clarifier (Definition and concept only)
	02	Filtration : Necessity, principles, types of filters Slow Sand Filter,
	03	Rapid Sand Filter and Pressure Filter – essential features
	04	Disinfection : Necessity, methods of disinfection
	05	Chlorination – free and combined chlorine demand, available chlorine, residual chlorine,
5 th	01	pre-chlorination, break point chlorination, super-chlorination
	02	Softening of water – Necessity, Methods of softening
	03	Lime soda process and Ion exchange method

	04	General requirements, types of distribution system-
	05	gravity, direct and combined
6 th	01	Methods of supply – intermittent and continuous
	02	Distribution system layout – types, comparison, suitability
	03	Valves-types, features, uses, purpose-slucice valves
	04	check valves, air valves, scour valves, Fire hydrants, Water meters
	05	Method of connection from water mains to building supply
7 th	01	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	02	WASTE WATER ENGINEERING
	03	Aims and objectives of sanitary engineering
	04	Definition of terms related to sanitary engineering
	05	Systems of collection of wastes– Conservancy
8 th	01	Water Carriage System – features, comparison, suitability
	02	Quantity of sanitary sewage – domestic & industrial sewage,
	03	variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
	04	Computation of size of sewer, application of Chazy's formula,
	05	Limiting velocities of flow : self-cleaning and scouring
9 th	01	General importance, strength of sewage
	02	Characteristics of sewage-physical, chemical & biological
	03	Concept of sewage-sampling, tests for – solids, pH,
	04	dissolved oxygen, BOD, COD
	05	Types of system-separate, combined, partially separate
10 th	01	features, comparison between the types, suitability
	02	Shapes of sewer – rectangular, circular
	03	avoid-features, suitability
	04	Laying of sewer
	05	setting out sewer alignment
11 th	01	Manholes and Lamp holes
	02	types, features, location, function
	03	Inlets, Grease & oil trap
	04	features, location, function
	05	Storm regulator, inverted siphon
12 th	01	features, location, function
	02	Disposal on land – sewage farming

	03	sewage application and dosing, sewage sickness-causes and remedies
	04	Disposal by dilution – standards for disposal in different types of water bodies,
	05	self purification of stream
13 th	01	Sewage treatment , Principles of treatment
	02	flow diagram of conventional treatment
	03	Primary treatment – necessity, principles
	04	essential features, functions
	05	Secondary treatment – necessity, principles
14 th	01	essential features, functions
	02	Sanitary plumbing for building : Requirements of building drainage
	03	layout of lavatory blocks in residential buildings,
	04	layout of building drainage
	05	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
15 th	01	Sanitary fixtures – features, function, and maintenance
	02	fixing of the fixtures – water closets, flushing cisterns, urinals,
	03	inspection chambers, traps, anti-syphonage pipe
	04	Revision and discussion
	05	Assessment and assignment submission