

ARYAN SCHOOL OF ENGINEERING & TECHNOLOGY, BHUBANESWAR

Dicipline: CIVIL	Semester: 5th	Name of the Teaching Faculty P. Mohapatra	
Subject: WSEWE	No of Days/Week Class Allotted: 5	Semester From date: _____ To date _____	No. of Weeks: 15

WEEK	Class Day	Theory Topics
01	1st	Water supply - Introduction to water supply, Quantity of water & Quality of water.
	2nd	Per capita demand, variation in demand and factors affecting demand.
	3rd	Necessity of treated water supply, methods of forecasting population.
	4th	Numerical problems using different methods.
	5th	Numerical problems.
02	1st	Impurities in water - organic & 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, impounded reservoir.
	5th	Underground resources - aquifer type and occurrence - Infiltration gallery, well, spring
03	1st	Infiltration well, Yield from well - methods of determination.
	2nd	Numerical problems using yield formulae (deduction excluded)
	3rd	Intakes - types, description of river intake reservoir intake, canal intake.
	4th	Pumps for conveyance & distribution - types, selection, installation.
	5th	Pipe materials - necessity, suitability, merits & demerits.

04	1st	Pipe joints - necessity, types of joints, suitability methods of jointing laying of pipes - methods
	2nd	Treatment of water - Design of treatment, Flow diagram of conventional water treatment system.
	3rd	Treatment process/units - Aeration, Necessity, plain sedimentation - Necessity, working principle
	4th	Sedimentation tanks - types, essential features, operation and maintenance.
	5th	Sedimentation with coagulation - Necessity, principle of coagulation, types of coagulations.
05	1st	Flash mixer, Flocculator, clarifier - definition & concept.
	2nd	Filtration - Necessity, types of filter and principle.
	3rd	Slow sand filter, rapid sand filter, pressure filter.
	4th	Disinfection - Necessity, methods, chlorination - free and combined chlorine demand
	5th	Available chlorine, residual chlorine, pre-chlorination, break point chlorination,
06	1st	super chlorination. Softening of water - Necessity, methods of softening - lime soda process
	2nd	Ion exchange method. Distribution system - general requirements, types - gravity, direct and combined.
	3rd	Method of supply - intermittent and continuous.
	4th	Distribution system layout - types, comparison, suitability.
	5th	Valves - types, features, uses, purpose - sluice valves

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WEEK	Class Day	Theory Topics
07	1st	check valves, air valves, cover valves.
	2nd	Fire hydrants, water meter.
	3rd	W/S plumbing in building - method of connection from water mains to building supply
	4th	General layout of plumbing arrangement for single storied building as per IS code.
	5th	Multi-storied building as per I.C code.
08	1st	Waste water Engg - Introduction, aims, objectives, definition of terms related to sanitary Engg.
	2nd	Systems of collection of wastes - conservancy and water carriage system.
	3rd	Features, comparison, suitability.
	4th	Quality and Quantity of sewage - Quantity of sanitary sewage - domestic & Industrial
	5th	Variation in sewage flow, numerical problems on computation quantity of sanitary sewage.
09	1st	Computation of size of sewer, Chezy's formula - limiting velocity of flow.
	2nd	General importance, strength of sewage, characteristics - physical, chemical, biological.
	3rd	Concept of sewage - sampling, tests - solid, PH
	4th	Dissolved oxygen, BOD, COD.
	5th	Sewerage system - types of system - separate, combined, partially separate, features.

10	1st	Comparison between types, suitability, shape of water - rectangular, circular.
	2nd	Avoid- features, suitability, laying of sewer - setting out sewer alignment.
	3rd	Sewer appurtenances and sewage disposal - manholes and lamp holes - types and features.
	4th	Location, Function, Inlets, grease & oil trap - Features, location, Function.
	5th	Storm regulator, inverted siphon - Features, location, Function.
11	1st	Disposal on land - sewage farming, sewage application and dosing.
	2nd	Sewage sickness - causes and remedies. Disposal by dilution - standards types of ^{water} _{pollution}
	3rd	Self purification of stream.
	4th	Sewage treatment - principle of treatment, flow diagram of conventional treatment.
	5th	Primary treatment - necessity, principles, essential features and functions.
12	1st	Secondary treatment - necessity, principles, essential features and functions.
	2nd	Sanitary plumbing for building - Requirement of building drainage.
	3rd	Layout of sanitary blocks in residential building.
	4th	Layout of building drainage, plumbing arrangement - single storied building.
	5th	plumbing arrangement - multi storied building as per IS code.

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Theory Topics

	1st	Sanitary fixtures - features, function.
	2nd	Working of the fixtures - water closets, flushing systems.
	3rd	urinals, inspection chambers, traps, anti siphonage pipe.
	4th	Class Test.
	5th	Revision unit 1, 2.
	1st	Class Test.
	2nd	Revision unit 3, 4.
	3rd	unit test.
	4th	Revision unit - 5, 6
	5th	unit test.
	1st	Revision unit - 7
	2nd	unit test.
	3rd	Revision unit - 8, 9
	4th	Revision unit - 9.
	5th	Revision unit - 10, 11