LESS0N PLAN

Name of the Institute :	**C. V. RAMAN POLYTECHNIC, BHUBANESWAR**
Department :	**CIVIL ENGINEERING**
Semester/Division/Branch :	**5th Semester / CIVIL**
Subject Name with code :	**WS&WWE/Th.4**
Total No. of Class (Required) :	**75**
Faculty Name :	**AMBIKA PRASAD MOHANTY**

Class No.	Brief Description of the Topic/Chapter to be taught	Remarks
1	**Introduction to Water Supply, Quantity and Quality of water:** Necessity of treated water supply	
2	Per-capita demand, variation in demand and factors affecting demand	
3	Methods of forecasting population, Numerical problems using different methods	
4	Impurities in water – organic and inorganic, Harmful effects of impurities	
5	……..DO……	
6	Analysis of water –physical, chemical and bacteriological	
7	……..DO……	
8	Water quality standards for different uses	
9	……..DO……	
10	……..DO……	
11	**Sources and Conveyance of water**	
12	Surface sources – Lake, stream, river and impounded reservoir	
13	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well	
14	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)	
15	Intakes – types, description of river intake, reservoir intake, canal intake	
16	Pumps for conveyance & distribution – types, selection, installation.	
17	Pipe materials – necessity, suitability, merits & demerits of each type	
18	Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method	
19	**Flow diagram of conventional water treatment system**	
20	……..DO……	
21	Treatment process / units :Aeration ; Necessity	
22	……..DO……	
23	Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance	

24	……..DO……	
25	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)	
26	……..DO……	
27	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features	
28	……..DO……	
29	Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, superchlorination	
30	……..DO……	
31	Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)	
32	……..DO……	
33	**Distribution system And Appurtenance in distribution system:**General requirements, types of distribution system-gravity, direct and combined	
34	……..DO……	
35	Methods of supply – intermittent and continuous	
36	……..DO……	
37	Distribution system layout – types, comparison, suitability	
38	……..DO……	
39	Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters	
40	……..DO……	
41	W/s plumbing in building :Method of connection from water mains to building supply	
42	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.	
43	**Introduction:** Aims and objectives of sanitary engineering	
44	……..DO……	
45	Definition of terms related to sanitary engineering	
46	Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability	
47	……..DO……	
48	**Quantity and Quality of sewage:**Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.	
49	……..DO……	
50	Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring	
51	……..DO……	
52	General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological	
53	……..DO……	

54	Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD	
55	**Sewerage system:**Types of system-separate, combined, partially separate , features, comparisonbetween the types, suitability	
56	……..DO……	
57	Shapes of sewer – rectangular, circular, avoid-features, suitability	
58	……..DO……	
59	Laying of sewer-setting out sewer alignment	
60	Sewer appurtenances and Sewage Disposal: Manholes and Lamp holes – types, features, location, function	
61	Inlets, Grease & oil trap – features, location, function	
62	Storm regulator, inverted siphon – features, location, function	
63	Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies	
64	……..DO……	
65	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream	
66	……..DO……	
67	**Sewage treatment :**Principles of treatment, flow diagram of conventional treatment	
68	……..DO……	
69	Primary treatment – necessity, principles, essential features, functions	
70	……..DO……	
71	……..DO……	
72	Secondary treatment – necessity, principles, essential features, functions	
73	**Sanitary plumbing for building :** Requirements of building drainage, layout of lavatory blocks in residentialbuildings, layout of building drainage	
74	Plumbing arrangement of single storied & multi storied building as per I.S. code practice	
75	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti syphonage pipe	

Signature of the Faculty **Signature of the H.O.D**