

Time: 3 Hours

✤ Answer ALL the questions.

✤ Missing data may be suitable assumed.

MANIPAL INSTITUTE OF TECHNOLOGY

V SEMESTER B.TECH. (CIVIL ENGINEERING)

Instructions to Candidates:

END SEMESTER EXAMINATIONS, NOV/DEC 2017

SUBJECT: WATER SUPPLY ENGINEERING [CIE 3103] REVISED CREDIT SYSTEM (20 /11/2017)

1A.	The populati population of i) Geom ii) Increa Year Population	on of a f the city netric in mental i 1930 8000	city as c y for the crease m ncrease 1940 12000	btained year 202 tethod method. 1950 17000	from a c 20 and 20 1960 22500	ensus re 30 by us 1970 29000	port is g sing 1980 37500	1990 47000	2000 57000	2010 66500	5
1 B .	Explain the purpose of aeration in water treatment along with its limitations										3
1C.	List out the significance of screening unit in water treatment.										2
2A.	Design the dimensions of a suitable sedimentation tank for raw supplies from a town of population of 100000 with a daily per capita water supply of 120 liters. Assume detention period of 3 hours 5 and velocity of flow as 20cm/min.										5
2B.	Explain the role of alum as a coagulant. Compare alum and iron salts as coagulants.										5
3A.	Design a rapid sand filter unit for 5 million liters per day supply with all its principal components.										5
3B.	In a pumping station 18000 cum water is to be raised per day from an intake well to a sedimentation tank under the static head of 21 m. Lengths of suction pipe and rising main are 40m and 150 m respectively. Diameter of the pipe is 50cm. There are two shifts of working of pumps each of 8 hours. Take coefficient of friction as 0.01 and combined efficiency of motor and pump as 80%. Recommend the number of units of pumps each having BHP of 30.										5
4A.	List the different methods used for desalination of water. Explain Electro dialysis method in detail.										4
4B.	What are conduits and explain different types of conduits with figures										4
4C.	A city has a population of 1 lakh with per capita water demand of 150 liters per day. The disinfectant used for chlorination is bleaching powder which contains 35% of available chlorine. Determine how much of bleaching powder is required annually at the water works, if 0.6ppm of chlorine dose is required for disinfection.										2

MAX. MARKS: 50

Reg. No.											
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SA. Explain the requirement of a water distribution system. 5B. Explain briefly Breakdown storage and Balancing storage. List out functions of distribution 4 reservoir 5C. Explain different system of water supply