Original

Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

III SEMESTER B.TECH (CIVIL) END SEMESTER EXAMINATIONS
MARCH 2021
SUBJECT: WATER SUPPLY ENGINEERING [CIE 2155]

Date of Exam: Time of Exam: Max. Marks: 50

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed

1A.	Define coincident draft? Discuss the effects of variation in demand on the design capacities of different components.	4	CO1
1B.	What do you meant by design period? Why is population forecasting necessary in the design of public water supply schemes?	2	CO1
1C.	Forecast the population for the next three decades by decreasing rate of growth method for the following given data. Year: 1970, 1980, 1990, 2000 Population: 80,000; 1,20,000; 1,68,000; 2,28,580	4	CO1
2A.	What are the different methods in which microbiological examination of water is been carried out. Explain the multiple tube fermentation method in detail.	3	CO2
2B.	Settling velocity of a discreet particle has been found to be 2.24 mm/sec under the conditions when Reynold's number is less than 0.5. If the diameter of the particle is 5 x 10^{-3} cm, and water temperature is 20°C, calculate the specific gravity of the particle.	3	CO3
2C.	Design a sedimentation tank for a town, which has average daily demand of 10 MLD. Assume detention period of 6 hours, velocity of flow as 20cm/min and depth of water in the sedimentation tank as 4m.	4	CO3
3A.	Draw a neat labelled diagram and explain the various zones of sedimentation tank	3	CO3
3B.	Describe the working of slat type aerator with the help of a neat diagram	3	CO3
3C.	Briefly describe following terms: a) Pre-chlorination b) Double Chlorination c) Super Chlorination d) Dechlorination	4	CO3
4A.	With a neat plot of typical curve obtained during determination of breakpoint	4	CO4

	chlorination, explain various chlorine demands that are met.		
2.	Design a rapid sand filter unit for 4 million liters of water supply with all the principal components including the under drainage system.	6	CO4
4.	Explain the mechanism involved in the theory of filtration.	4	CO4
3.	Discuss the grid iron system of layout with merits and demerits.	6	CO5