BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: B.TECH   SEMESTER: V
BRANCH: CIVIL   SESSION: MO/2022

SUBJECT: CE304 ENVIRONMENTAL ENGINEERING

TIME: 2 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q1 (a)	Establish relationship between hardness and alkalinity.	[2]	1	2
Q1 (b)	Assuming the geometric rate of growth of population of a town, calculate the population of the town in the year 2021 with the help of the following census records of the population.	[3]	1	3

Year	1991	2001	2011
Population in thousand	258	495	735

			CO	BL
Q2 (a)	Establish relationship between Darcy velocity and actual velocity.	[2]	1	2
Q2 (b)	The diameter of a tube well is 300 mm and depth of aquifer is 15 m. the radius of circle of influence of the well is 135 m. the coefficient of permeability of the soil is 30 m3/m2/d. calculate the drawdown of the well when the yield is 2000 m3/d.	[3]	1	3
Q3 (a)	Distinguish between discrete settling and flocculent settling.	[2]	2	2
Q3 (b)	Design a rectangular settling tank to treat 2 Mld of coagulant water of the detention period is to be 3 hours the velocity of flow 7.5 cm/min and the depth of the water at 3 metres. Calculate the overflow rate for this tank.	[3]	2	3
Q4 (a)	Discuss the mechanism of filtration.	[2]	2	1
Q4 (b)	Design a rapid sand filter unit for a population of 30,000. Assume maximum rate of supply is 200 lpcd and hydraulic loading equal to 120,000 l/sq.m/d.	[3]	2	3
Q5 (a)	Which distribution layout is suitable for old cities? Discuss.	[2]	3	2
Q5 (b)	Discuss prevalent methods of distribution with its advantages and limitations.	[3]	3	2

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