B.E. CONSTRUCTION ENGINEERING THIRD YEAR FIRST SEMESTER EXAM 2024

SUBJECT: ENVIRONMENTAL ENGINEERING

Time : Three hours   Full Marks : 100

Use separate Answer script for each Part
PART I (60 Marks)

Answer all the questions

(5+5) + (6+8)= 24

1. A) How will you explain environmental engg & pollution? Can every element in nature be termed as pollutant? If yes or no- justify your answer.
   B) Classify the characteristics of pollutants for waste water. Give a brief account for each of characteristics along with source.

(4+4)+ (3+3) =14

2. A) What are the treatment methods that are adopted for treatment of waste water? Give the names under each methods.

   B) Draw the primary and secondary flowsheets and label each unit neatly

(6+8+8) =22

3. A) Mention the average values of domestic waste water parameters in a tabular form .

   B) Draw the flowsheet for an activated sludge process and label the units .

   C) Briefly discuss on each of the parameters: MLSS, MLVSS, RECIRCULATION RATION, FOOD : MICRO-ORGANISM RATIO.

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PART - II (40 Marks)

Use separate answerscripts.   Full Marks : 100

	No. of Questions	Answer any TWO questions.	Marks
CO2	Q1.a)	Write a short note on types of sewage and sewerage systems.	05
	Q1.b)	A 350 mm dia sewer is to flow at 0.35 depth on a grade ensuring a degree of self-cleansing equivalent to that obtained at full depth at a velocity of 0.8 m/s. Find i) The required grade ii) associated velocity iii) the rate of discharge at this depth. Given: i) Manning's rugosity coefficient = 0.014 ii) Proportionate area = 0.315 iii) Proportionate wetted perimeter = 0.472 iv) Proportionate HMD (r/R) = 0.7705	15
CO3	Q2.a)	What are the various sewer sections used in practice? Give short description along with suitable sketches.	10
	Q2.b)	Given the total area of a district is 36 hectares and the maximum rain intensity is taken as 5 cm/hr. If the density of population is 250 per hectare and the quota of water supply per day is 225 litres, calculate the quantity of (a) Sewage for which the sewers of a separate system should be designed.	10
CO3	Q.3(a)	Write down the various formulae used for estimating peak runoff explaining the meaning of various notations used.	05
	Q.3(b)	Design a sewer to serve a population of 36000 and the daily per capita water supply allowance is 135 litres of which 80 % finds its way into the sewer. The slope available for the sewer to be laid is 1 in 625 and the sewer should be designed to carry four times the dry	15

Ref. No.: Ex/CON/PC/B/T/316/2024

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PART - II

Use separate answerscripts.   Full Marks : 40

	No. of Questions	Answer any TWO questions.	Marks
		weather flow when running full. What would be the velocity of flow in the sewer when running full?	