B.ConstructionEngg 3rd year,1st Semester supplementary Examination ,24

Sub: Environmental Engineering **Ref: CON/PC/ B/T/316/2024(S)**

Time : Three hours Full Marks : 100

PART-I

Total marks: 60

Answer all the questions:
Use separate answer script for each Part

			Marks
CO1	PO1	1.A)What do you mean by pollution ? What is permissible limit or threshold Value of any polluting parameter? B) What are types of characteristics of polluting parameters ? Give a brief account of each of them?	3+3=6
	PO2		4+10=14
CO2	PO1	A) Give neat sketches of primary and secondary flow sheets . Lebel each of the component	5+5=10
	PO2	B) Give a chart of parameters of domestic waste water and the range of values of parameters for different strength waste water.	3+7=10
CO2	PO1	A) Define different types of treatment methods for waste water	3
	PO2	B) Describe activated sludge treatment process	3
	PO3	C) Draw a detailed flowsheet of activated sludge process and lebel each unit	6
	PO3	D) Describe MLSS,MLVSS, Recirculation ratio, F/M ratio along with standard range Of values	8

[Turn over

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

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

SUBJECT: ENVIRONMENTAL ENGINEERING

Time : Three hours | **PART - II (40 Marks)** | Full Marks : 100

Use separate answer script for each Part

Answer any TWO questions.

	No. of Questions		Marks
CO2	Q1.a)	Write a short note on types of sewage and sewerage systems.	08
	Q1.b)	Determine the size of a circular sewer for a discharge of 600 lps running half-full. Assume i = 0.0001 and n = 0.015; n not varying with depth. The following Table may be used.	12

Table . Proportionate Values of Hydraulic Elements for Circular Sewers when Flowing Partially Full (without being corrected for variations of roughness with depth)

Proportionate Depth d/D (1)	Proportionate area a/A (2)	Proportionate Wetted perimeter p/P (3)	Proportionate H.M.D. r/R (4)	Proportionate Velocity v/V (5)	Proportionate Discharge q/Q (6)
1·00	1·00	1·00	1·000	1·000	1·000
0·90	0·949	0·857	1·192	1·124	1·066
0·80	0·858	0·705	1·217	1·140	0·983
0·70	0·748	0·631	1·185	1·120	0·838
0·60	0·626	0·564	1·110	1·072	0·671
0·50	0·500	0·500	1·000	1·000	0·500
0·40	0·373	0·444	0·857	0·902	0·337
0·30	0·252	0·369	0·684	0·776	0·196
0·20	0·143	0·296	0·482	0·615	0·088
0·10	0·052	0·205	0·254	0·401	0·021
0·00	0·000	0·000	0·000	0·000	0·000

CO3	Q2.a)	Discuss the use of Nomograms.	3
	Q2.b)	Assuming that the surface on which the rain falls in a district is classified as follows: 20% of the area consists of roof for which the runoff ratio is 0.9 and 5% of the area consists of paved yards of houses for which the runoff ratio is 0.80.	17

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

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

SUBJECT: ENVIRONMENTAL ENGINEERING

PART - II

Full Marks : 40

Answer any TWO questions.

	No. of Questions		Marks
		The total area of the 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. (b) Storm water for which the sewers of a partially separate system should be designed.	
CO3	Q.3(a)	Discuss the various systems of sanitation in detail.	6
	Q.3(b)	Calculate the velocity and discharge through a rectangular concrete lined smooth channel 2.4 m wide and 1.2 m deep built to a slope of 1 in 200, when running completely full. Use Bazin's coefficient in Chezy's formula assuming K = 0.3 for smooth concrete lined surface.	14