Hall Ticket Number:

Code No. : 15160 N

VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (Civil Engg.) V-Semester Main Examinations, Jan./Feb.-2024

Environmental Engineering

Time: **3 hours** Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Differentiate between wet weather and dry weather flow.	2	1	1	1
2.	What do you mean by sewerage system?	2	1	1	1
3.	Explain unit operations and unit processes with examples.	2	1	2	1
4.	Enlist various water disinfection methods.	2	1	2	1
5.	Define relative stability. How to estimate the relative stability of sewage at 37° C?	2	1	3	1
6.	Explain the utility of skimming tank.	2	2	3	1
7.	Draw a typical flow diagram of a wastewater treatment plant.	2	1	4	6
8.	What is Sequential Batch Reactor (SBR)?	2	1	4	1
9.	Briefly explain any two methods of sludge disposal.	2	1	5	6
10.	Define air quality index.	2	2	5	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	Discuss about various modes of water distribution w.r.t. advantages and disadvantages associated with each one of them.	4	2	1	1
b)	With the help of the following data, Estimate using geometrical increase method, the population of the city for the year 2010 and 2016.	4	3	1	2

Year	1930	1940	1950	1960	1970	1980	1990
Population	25,000	27,500	34,100	41,500	47,050	54,500	61,000

12. a)	What are the different forms of chlorination? Discuss break point chlorination in brief.	4	2	2	6
b)	Explain in detail the process of coagulation and flocculation in water treatment.	4	3	2	1

Contd... 2

13. a)	Enlist the types of settling. Classify and explain the types of primary sedimentation tank.	4	2	3	1
b)	The 5-day 37° C BOD of a sewage sample is 250 mg/l. calculate its ultimate and 7 days 30° C BOD. Assume the deoxygenation constant at 20° C as 0.1.	4	4	3	2
14. a)	Describe activated sludge process in wastewater treatment along with its aeration systems.	4	2	4	1
b)	The sewage of a town has to be discharged into a river stream. The quantity of sewage produced per day is 10 million liters, and its B.O.D. is 300 mg/l. If the discharge in the river is 500 l/s and if its B.O.D. is 10 mg/l, find out the B.O.D. of the diluted water.	4	3	4	2
15. a)	Design septic tank for a community of 400 people. Assume the necessary data.	4	4	5	6
b)	Explain the hierarchy and significance of sludge management.	4	2	5	12
16. a)	Discuss the stepwise procedure adopted in hardy cross method for the analysis of complex pipe networks.	4	3	1	2
b)	Explain the components and working of a rapid sand filter.	4	2	2	1
17.	Answer any ***two*** of the following:				
a)	Explain the function and types of grit chamber in wastewater treatment. Enlist the methods of disposal of grit.	4	2	3	1
b)	Briefly describe oxygen sag curve. Explain reoxygenation and deoxygenation in self-purification process of river stream.	4	3	4	6
c)	Classify the types of solid waste w.r.t. their source of generation. Describe the methods of treatment of solid waste?	4	3	5	6

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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