R22 Regulation *Subject code:4E6AB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular/Supplementary Examinations, April 2026

ENVIRONMENTAL ENGINEERING

(CE)

Maximum Marks: 60 Date:16.04.2026 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x1M=10 Marks)		Marks	CO	BTL
1a)	Write types of water demand.	1M	1	L1
b)	State the objectives of a protected water supply system	1M	1	L1
c)	List the factors effecting sedimentation	1M	2	L1
d)	Mention the advantages of chlorine, as disinfectant	1M	2	L1
e)	What are biological characteristics?	1M	3	L1
f)	Name components used in sewer line.	1M	3	L1
g)	Differentiate screen chamber and grit chamber	1M	4	L2
h)	State the disadvantageous of septic tank	1M	4	L1
i)	What is plume behavior?	1M	5	L1
j)	List the major sources of air pollution	1M	5	L1

Part-B

	Answer All the following questions. (5X10M=50Marks)	Marks	CO	Bloom Tx level
2	a) Discuss about the water quality standards available to characterize the drinking water quality	5M	1	L2
	b) Identify the daily water demand of the city in 2031, if the per capita water demand is 135 Lpcd and the city population records is as given below	5M	1	L3

Census Year	1961	1971	1981	1991	2001
Population	25000	52000	94000	164000	247000

OR

3	a) Explain the different sources of water supply used for public water supply schemes.	5M	1	L2
	b) Explain waterborne diseases and the importance of protected water supply systems.	5M	1	L2

4	a) List the factors which affects the dosage of coagulants and explain the procedure to determine the optimum dose of coagulant by jartest apparatus. b) Discuss the methods of disinfection and state the quality requirements of a good disinfectant?	5M 5M	2 2	L2 L2
	OR			
5	a) Explain the process of flocculation and its importance in water purification. b) Explain the different methods of water distribution systems used in towns and cities.	5M 5M	2 2	L2 L2
6	a) Differentiate between BOD and COD. Derive an expression to compute BOD remaining and exerted from the first order reaction rate principles. b) Mention important formulae used for design of sewers and analyze each of the methods. Also mention Chezys C and Manning,s n values for different type of pipes	5M 5M	3 3	L2 L3
	OR			
7	a) What do you mean by sewer appurtenances? Why are they needed? List down different appurtenances in practice. b) Describe the criteria for selection of site for pumping station. List out the facilities/ accessories required in the pumping station.	5M 5M	3 3	L3 L2
8	a) Draw process flow diagram of high rate two stage trickling filter and discuss its function. Also explain the importance of recirculation. b) Design a rectangular grit chamber from the following data Flow of sewage = $55x10^6$ litres/day Specific gravity of the grit = 2.70 Size of the grit particle to be removed = 0.21 mm Viscosity of the water = $1.0x10^2$ cm^2 /sec	5M 5M	4 4	L3 L5
	OR			
9	a) Explain the working of septic tank along with design criteria, with a neat sketch b) Describe the operational problem of activated sludge process and give the remedial suggestions.	5M 5M	4 4	L2 L2
10	a) Discuss the Greenhouse effect. Explain its causes, mechanism, and impacts on climate change. b) Define noise pollution. Explain the major sources and causes of noise pollution in urban areas.	5M 5M	5 5	L2 L2
	OR			
11	a) Explain the measurement of noise pollution. Describe the instruments used and units of measurement. b) Explain the ozone layer depletion (ozone holes). Discuss causes, effects, and control measures	5M 5M	5 5	L2 L2