Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination Dec-2023

CE3CO26 Environmental Engineering -II

Programme: B.Tech. Branch/Specialisation: CE

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following type of treatment methods are used for municipal and industrial waste waters? **1**

(a) Main stream (b) Slow rate

(c) Overflow (d) Rapid infiltration

ii. What is a sewer that runs full under gravity, flow at a pressure above the atmosphere in the sewer called? **1**

(a) Flushing manhole (b) Inverted siphon

(c) Siphon (d) Curb inlet

iii. How is Chemical Oxygen Demand (COD) calculated? **1**

(a) Waste water is oxidised chemically using strontium in acid solutions

(b) Waste water is oxidised chemically using bromine in acid solutions

(c) Waste water is oxidised chemically using dichromate in acid solutions

(d) Waste water is oxidised chemically using sodium in acid solutions

iv. What is the temperature at which MPN test is performed? **1**

(a) 35^{o}C (b) 37 ^{o}C (c) 40^{o}C (d) 45 ^{o}C

v. What is the accumulated layer at the bottom of the tank called as? **1**

(a) Flocs (b) Sediment (c) Sludge (d) Sewage

vi. Why are the baffle walls provided? **1**

(a) Prevent short circuit (b) Abstruct flow

(c) Reduce velocity (d) Collect sediment

P.T.O.

vii. _____ is provided after activated sludge process. **1**
(a) Primary sedimentation tank
(b) Flocculation tank
(c) Secondary sedimentation tank
(d) Sand filter

viii. Which of the following methods are not used for the dispersion of the effluent out of a septic tank? **1**
(a) Wetlands
(b) Soak pit
(c) Evapo-transpiration mound
(d) Leach field

ix. Which of the following is a liquid form of aerosol? **1**
(a) Fume (b) Dust (c) Mist (d) Smoke

x. How many parameters are taken into consideration when measuring air quality, in India? **1**
(a) 4 (b) 3 (c) 8 (d) 9

Q.2 i. What are the factors that affect the design of sewers? **2**
ii. Write short note on construction and maintenance of sewers. **3**
iii. Enlist different sewer appurtenances and explain with sketch the functioning of "Inverted siphon". **5**
OR iv. Discuss and compare the merits and demerits of conservancy and water carriage system. **5**

Q.3 i. What do you understand by the term "Self Cleansing Velocity" in sewers? **2**
ii. What is sewage forming? What are its advantages over the method of disposal of sewage by dilution? What precautions must be taken in its operation to prevent health hazards? **8**
OR iii. If the 5 days BOD of a sample is 276 mg/l and ultimate BOD at the same temperature is 380 mg/l, at what rate the waste is oxidized? **8**

Q.4 i. Discuss Primary Sedimentation Tank. **3**
ii. Explain primary treatment of sewage with the help of flow chart. **7**
OR iii. What are the characteristics of sewage? Explain. **7**

Q.5 i. Write short note on Sewage sickness and Sludge disposal. **4**
ii. Compare in detail "Activated Sludge Process" with "Trickling Filter". **6**
OR iii. Design a septic tank for ten users using Fixture Unit Approach with neat sketch. **6**

Q.6 Attempt any two:
i. What are the sources of air pollution? Explain its types. **5**
ii. What are the effects of air pollution? Also discuss the measures taken to mitigate its effect. **5**
iii. Explain air quality standards in India. **5**

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Scheme of Marking

Faculty of Engineering

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Programme: B.Tech. Branch/Specialisation:

Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.

Q.1	i)	b		**1**
	ii)	b		**1**
	iii)	c		**1**
	iv)	b		**1**
	v)	c		**1**
	vi)	a		**1**
	vii)	c		**1**
	viii)	a		**1**
	ix)	c		**1**
	x)	c		**1**
Q.2	i.	What are the factors that affect the design of sewers?		**2**
	ii.	Write short note on construction and maintenance of sewers.		**3**
		Construction of sewer		**1.5**
		Maintenance of Sewer		**1.5**
	iii.	Enlist different sewer appurtenances and explain with sketch the functioning of "Inverted siphon".		**5**
		Sewer Appurtenances		**2.5**
		Sketch the functioning of "Inverted siphon"		**2.5**
OR	iv.	Discuss and compare the merits and demerits of conservancy and water carriage system.		**5**
		merits and demerits of conservancy System		**2.5**
		merits and demerits of water carriage system		**2.5**
Q.3	i.	What do you understand by the term "Self Cleansing Velocity" in sewers?		**2**
	ii.	What is sewage forming? What are its advantages over the method of disposal of sewage by dilution? What precautions must be taken in its operation to prevent health hazards?		**8**
		As per explanation		
OR	iii.	If the 5 days BOD of a sample is 276 mg/l and ultimate BOD at the same temperature is 380 mg/l, at what rate the waste is oxidized.		**8**
Q.4	i.	Discuss Primary Sedimentation Tank		**3**
	ii.	Explain primary treatment of sewage with the help of flow chart.		**7**
		primary treatment of sewage		**4**
		Flow Chart		**3**
OR	iii.	What are the characteristics of sewage? Explain		**7**
		characteristics of sewage		**2.5**
		Each Explanation		**4.5**
Q.5	i.	Write short note on Sewage sickness and Sludge disposal.		**4**
		Sewage sickness		**2**
		Sludge disposal		**2**
	ii.	Compare in detail "Activated Sludge Process" with "Trickling Filter".		**6**
		Activated Sludge Process		**3**
		Trickling Filter		**3**
OR	iii.	Design a septic tank for ten users using Fixture Unit Approach with neat sketch.		**6**
		Design a septic tank		**4**
		neat sketch		**2**
Q.6				
	i.	What are the sources of air pollution? Explain its types		**5**
		sources of air pollution		**2**
		its types explanation		**3**
	ii.	What are the effects of air pollution and also discuss the measures taken to mitigate its effect?		**5**
		effects of air pollution		**2.5**
		measures taken to mitigate its effect		**2.5**
	iii.	Explain air quality standards in India		**5**

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