



Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

CE3EL01 Environmental Engineering

Programme: B.Tech.

Branch/Specialisation: CE

Duration: 3 Hrs.

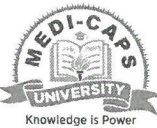
Maximum Marks: 60

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.

- Q.1 i. A sewer is commonly design to attain- **1**
 (a) Self-cleansing velocity (b) maximum velocity
 (c) Both (a) and (b) (d) None of these
- ii. Inverted siphon is used for- **1**
 (a) Sewer crossing a river (b) Storm water regulations
 (c) Maintenance of sewer (d) None of these
- iii. Average temperature of sewage in India- **1**
 (a) 20°C (b) 25°C (c) 30°C (d) None of these
- iv. In the design of storm sewers, "time of concentration" is relevant to- **1**
 (a) Velocity in the sewer (b) Rainfall Intensity
 (c) Time of travel (d) Area served by the sewer
- v. BOD Indicates- **1**
 (a) Biological oxygen demand
 (b) Biochemical oxygen demand
 (c) Bio geo oxygen demand
 (d) None of these
- vi. What is SRT? **1**
 (a) Surface retention time (b) Sludge retention time
 (c) Solid retention time (d) None of these
- vii. Oxidation pond- **1**
 (a) Algae-bacteria symbiosis (b) Removes floating materials
 (c) Both (a) and (b) (d) All of these
- viii. What is detritus tank? **1**
 (a) Removes silt and some organic matter
 (b) Microorganism
 (c) Removes floating materials
 (d) None of these

- ix. What is the unit of noise pollution? **1**
 (a) Hertz (b) Decibel (c) Newton (d) None of these
- x. Which of the following is called secondary air pollutant? **1**
 (a) PANs (b) Ozone
 (c) Carbon mono oxide (d) Nitrogen di oxide
- Q.2 i. What is self-cleansing velocity? **2**
 ii. Write about Separate and combined system of sewage collection. **3**
 iii. Explain different types of shapes of sewer. **5**
- OR iv. Explain hydraulic design of storm water. **5**
- Q.3 i. Write in brief about manhole and street inlets. **2**
 ii. Explain different types of sanitary fittings and appliances. **8**
- OR iii. A 30 cm diameter sewer with invert slope of 1 in 500 in running full. Calculate the rate of flow in the sewer. Compare the velocity with self-cleansing velocity by Manning's formula. **8**
- Q.4 i. Draw sewage treatment flow sheet. **3**
 ii. Explain primary settling tank in detail. **7**
- OR iii. Explain grit chambers and its working with design criteria. **7**
- Q.5 i. What is sludge digestion? **2**
 ii. Write about methods of disposal in brief. **3**
 iii. Explain rapid and slow sand trickling filter with their difference and problems. **5**
- OR iv. Explain activated sludge process in detail. **5**
- Q.6 Attempt any two:
 i. What is air pollution, it's sources and its effects? **5**
 ii. Write about noise pollution with noise abatement and it's control. **5**
 iii. Explain various methods of solid waste collection and disposal? **5**

Scheme of Marking

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

Q.1	i)	(A) Self-cleansing velocity	1
	ii)	(B) Storm Water Regulations	1
	iii)	(A) 20°C	1
	iv)	(C) time of travel	1
	v)	A) Biological oxygen demand	1
	vi)	C) Solid retention Time	1
	vii)	A) Algae-bacteria Symbiosis	1
	viii)	A) Removes silt and some organic matter	1
	ix)	B) Decibel	1
	x)	D) Nitrogen Di Oxide	1
Q.2	i.	2 Marks for correct definition	2
	ii.	1.5 marks each for both systems	3
	iii.	1 mark for each type (any 5)	5
OR	iv.	2 marks for description, 2 marks for data & 1 mark for diagram	5
Q.3	i.	1 mark for each inlet	2
	ii.	4 marks for fittings & 4 marks for appliances	8
OR	iii.	1 mark for data, 2 marks for formula & 5 marks for correct solution	8
Q.4	i.	3marks for flow chart	3
	ii.	4 marks for explanation & 3 marks for diagram	7
OR	iii.	2 marks for definition, 3 marks for working & 2 marks for design criteria	7
Q.5	i.	2 marks for definition	2

	ii.	1 mark for method name & 2 marks for explanation	3
	iii.	2.5 marks for each type	5
OR	iv.	2 marks for diagram & 3 marks for explanation	5
Q.6			
	i.	2 marks for definition, 1 mark for sources & 2 marks for effects	5
	ii.	2 marks for definition, 1 mark for abatement & 2 marks for control measures	5
	iii.	2.5 mark each for collection & disposal methods.	5
