

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

EVENING

[Total No. of Questions: 09]

[Total No. of Pages: 2.]

Uni. Roll No.

03 JAN 2023

Program: B.Tech. (Batch 2018 onward)

Semester: 5th

Name of Subject: Environment Engineering.

Subject Code: PCCE-112.

Paper ID: 16389.

Scientific calculator is Allowed

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) Mention advantages and disadvantages of Oxidation Pond.
- b) Discuss the importance of COD
- c) Explain the term MPN.
- d) Mention the operational troubles of a standard rate trickling filter.
- e) What are the sources and impact of hardness in water supplies.
- f) Explain the significance of alkalinity in coagulation practice.

Part – B

[Marks: 04 each]

Q2. What are the various stages involved in air sampling/stack sampling? What are various methods to control Noise Pollution.

Q3. Estimate the moisture content of a solid waste sample with the following composition:

Component	Percent by Mass	Moisture (%)
Food waste	20	70
Paper	40	6
Cardboard	10	5
Plastics	5	2
Garden Trimming	5	60

EVENING
03 JAN 2023

Wood	5	20
Tin Cans	5	3

Q4. Data from an unseeded domestic waste water BOD test are: 5 ml of waste in 300 ml bottle, initial D.O. of 7.8 mg/l, and 5 days DO equal to 4.3 mg/l. Compute (a) the BOD; and (b) the ultimate BOD, assuming a k-rate of 0.10 per day.

Q5. The census record of a particular town shows the population figures as follows:

Years	1960	1970	1980	1990
Population	55,500	63,700	71,300	79,500

Estimate the population for the year 2020 by decreasing Rate of Growth.

Q6. Depending upon the oxygen requirement of the bacteria discuss the following bacteria: - (a) Facultative Bacteria. (b) Anaerobic Bacteria.

Q7. Discuss in detail any two methods of collection and transfer of solid waste.

Part – C

[Marks: 12 each]

Q8. (a) Explain the term 'refuse' and give its composition and classification. Describe briefly the various methods employed for the collection and disposal of refuse. (8 marks)
(b) Discuss sources, origin and hazardous effect of sulphur dioxide and carbon monoxide on human body (4 marks)

OR

(a) Draw the flow sheet showing sequence of various treatment units of a typical water treatment plant with perennial river as the source of water. List these treatment units sequentially. (8 marks)
(b) Give suitable reasons why the following are important parameters for drinking water quality: (a) Nitrate (b) Fluoride (4 marks)

Q9. A circular sewer of 45 cm diameter was designed for a town of population of 30,000. The sewer was designed to carry 3.5 times of the dry weather flow. What slope should be provided to the sewer when running full? Value of $n=0.012$ in Manning's equation. Assume other relevant data suitably.

OR

Design a sewer to serve a population of 36000; the daily per capita water supply allowance being 135 litres of which 80% finds its way into the sewer. The slope available for the sewer to be laid is 1 in 625 and the sewer should be designed to carry out four times the dry weather flow when running full. What would be the velocity of flow in the sewer when running full? Assume $n=0.012$ in Manning's formula.
