40+40+40 +24

BE Civil - VIII c-scheme 11.5.23 (154)

(3 Hours) [Total Marks : 80]

Notes

1. Question No **ONE** is **Compulsory.**
2. Answer any **THREE** from remaining.
3. Draw **FIGURES** wherever necessary. Figures to the right indicate full marks.
4. **WRITE** proper question / sub question numbers on the left margin allotted in answer sheet.
5. Each Question carries **EQUAL** marks.
6. **ASSUME** any additional data if necessary and state it clearly.

1. **Attempt (Any 4)**

a) State the importance of industrial waste treatment. What is proportioning? 05

b) Explain any two methods of volume reduction. 05

c) The average sewage flow from a city is 70x10^6 litres/day. If the average BOD is 280 mg/lit, compute the total 5 day oxygen demand in kg and population equivalent of sewage assuming per capita BOD of sewage per day as 80gram. 05

d) Discuss effluent standards and stream standards. 05

e) What is Environment Audit? 05

2. a) 10

A wastewater treatment plant disposes of its effluent into a stream at a point A. Characteristics of the stream at a location fairly upstream of A and of the effluent are as below.

Item	Units	Effluent	Stream
Flow	m^3/sec	0.20	0.50
Dissolved oxygen	mg/lit	3.0	8.0
Temperature	^0C	26	22
BOD_5 at 20^0C	mg/lit	35	3

Equilibrium concentration of dissolved oxygen C_S for the fresh water is as follows:

Temperature ^0C	18	20	22	23	24	25	26
DO (mg/lit)	9.54	9.17	8.99	8.83	8.53	8.38	8.22

The velocity of the stream downstream of the point A is 0.1m/sec. Determine the critical oxygen deficit and its location. Assume K_D at 20^0C(base10)=0.087per day and K_R at 20^0C(base10)=0.174 per day.

b) Explain the effluent treatment plant required for treating waste from sugar industry. List the byproducts obtained from manufacturing process of sugar. 10

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3. a) Discuss various methods of mixing adopted for equalization. Also Explain online and off-line equalization. 10

b) Why EIA is done? Explain the same with following context for any infrastructure i)Screening ii) Scoping iii) Prediction iv) Reporting 10

4. a) List different types of aerobic and anaerobic treatment. Explain any two in detail. 10

b) Discuss the characteristics of the waste water generated from a typical Dairy Industry. Draw the flow sheet for the treatment of effluent for the disposal on land and into Inland surface water. 10

5. a) Describe with the help of flow sheet how you will treat wastes from Metal processing industry. 10

b) With the help of flow sheet, explain the manufacturing process of the paper by Kraft process. Draw the flow diagram of Massive lime treatment for colour removal in Paper industry. 10

6. a) Enumerate the various methods that can be used to dispose of the digested sludge. Select and describe the best method mainly adopted in new plants. 10

b) Differentiate between STP and CETP. Explain with flow diagram CETP with its merits and demerits. 10