

40+40+40+6

16.5.23

T. E Civil - VI e-scheme

Time-3.0 hours

Marks- 80

- Note: 1) Question No.1 is compulsory
2) Attempt any three questions out of remaining five questions
3) Assume the suitable data if necessary and state the same.

Q1 Attempt any four questions out of the following (5x4=20)

- a) Explain the oxygen sag curve.
- b) What are the factors affecting location of intake structure?
- c) Define air pollution and what is the effect of air pollution on human health.
- d) Explain why sewers are design to run partially full.
- e) What are the good quality of traps.

Q2 A) Draw the layout of water treatment plant and explain the function of each unit. (10)

B) Design the septic tank for hostel building of 500 students. The rate of water supply is 150 liters per capita per day and assume 80% water is converted to waste water. Assume the detention period 24 hours and cleaning period 2 years. (10)

Q3A) Following is the data for single stage trickling filter (10)

- 1) sewage flow = 5MLD
- 2) BOD of raw sewage = 300mg/l
- 3) Recirculation ratio = 2.0
- 4) Depth of filter media = 2.0M
- 5) BOD removal in primary tank = 25%
- 6) Effluent BOD= 30 mg/l

Determine the size of trickling filter and its efficiency.

B) Draw the neat sketch of rapid sand filter with all its principle component and under drainage system and explain the function of each component. (10)

Q4 A) Explain the process of break point chlorination (5)

B) Explain the functional element of municipal solid waste management. (5)

C) what is temporary and permanent hardness? Explain the zeolite process. (10)

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- Q5 A) explain why rain water harvesting is necessary (5)
B) what is noise pollution and what are the effects of noise pollution (5)
C) Define the following terms used in activated sludge process (10)
i) BOD loading or organic loading rate
ii) F/M ratio
iii) Aeration period
iv) sludge age
v) sludge volume Index

- Q6 A) Draw the neat sketch of drop manhole and explain its function. (5)
B) Differentiate between aerobic process and anaerobic process (5)
C) The maximum daily demand of water purification plant has been estimated as 6MLD. Design the dimension of suitable sedimentation tank: Assuming detention period of 3 hours and velocity of flow 25cm/minute. (5)
D) A 5 day BOD of raw sewage sample is 300mg/l. what will be the BOD of the sample at a temperature of 25°C after 7 days. Take $KD = 0.1$ (5)
