

SECTION-B

- Q2. A main sewer is to be designed to receive a flow from 1 km^2 area of a community where population density is 200 persons/ha. The average flow is 150 lpcd. What is the design flow for the main sewer?
- Q3. Sketch and explain the construction and working of inverted siphons.
- Q4. What are the different measures of organic content in wastewater? Discuss the importance of BOD/COD ratio.
- Q5. A channel - type grit chamber has a flow through velocity of 0.25 m/s, a depth of 0.8 m and a length of 10 m. For inorganic grit particles with specific gravity 2.5, determine the particle size that can be removed with 100 percent efficiency, (assume $\nu = 1.01 \times 10^{-2} \text{ cm}^2/\text{s}$).
- Q6. Differentiate between oxidation pond and oxidation ditch.

SECTION-C

- Q7. Compare the advantages and disadvantages of aerobic and anaerobic systems of wastewater treatment. Use at least two examples from each to substantiate your point.
- Q8. a) Calculate the surface area required for a stabilization pond to serve a population of 1 lakh sewage flow of 189 lpcd. BOD is 200 mg/L hydraulic loading of 250kg BOD/d.ha. if the average liquid depth 1.5m. Calculate the retention time of the sewage based on influent flow. Sketch the process diagram.
- b) A trickling filter has a diameter of 20m and depth 2.5m. it is operated with a direct circulation ratio of 1.5 and influent sewage rate of 2 million litres per day. Influent BOD into the filter is 200 mg/L and effluent BOD is 30 mg/L. Calculate the hydraulic loading rate and organic loading rate. What is the efficiency of the filter?
- Q9. Write short notes differentiating the following :
- a) One Pipe system and two pipe system of plumbing
 - b) Grease trap and Grit chamber
 - c) Pump capacity and pump efficiency
 - d) Stabilization pond and constructed wet land

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.