

B.E. Civil Engineering (CBCS Pattern) Sem-VIII  
**CE807 - Elective-IV : Design of Water & Waste Water Treatment System**

P. Pages : 1

Time : Three Hours



**GUG/W/22/13593**

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Draw a flowsheet of Convectional water treatment plant. 8  
b) Explain the factors to be considered while selecting the site of water treatment plant. 8  

**OR**
2. a) Write short note on gas transfer in aeration process. 8  
b) Design cascade type aerator for the design flow of 15 MLD. 8
3. a) Write down the factors affecting coagulation & Flocculation. 8  
b) Design a suitable flash mixer for a design flow of 25 MLD. 8  

**OR**
4. a) Design clariflocculators for 25 MLD (Design flow). Assume suitable data. 10  
b) Water is Zig – Zag through the battled channel having 21 around the end baffles. The velocity of water in the channel is 0.2 m/sec & the speed upto 0.60 m/sec in the slots. The displacement time is 30 minutes & flow of water is 500 m<sup>3</sup>/hr Determine. 6  
i) Loss of head neglecting normal channel friction.  
ii) G & Gt values.
5. a) State the difference between slow sand & rapid sand filter. 8  
b) Design a rapid sand filter for design flow of 10 MLD with under drainage system. 8  

**OR**
6. a) Explain in detail disinfection action of chlorine. 8  
b) Design a circular sedimentation Tank for town having population of 70,000. The average water demand is 160 LPCD. Assume 75% water reaches at treatment unit & max demand is 2.7 times average demand. 8
7. a) Draw a flow sheet of conventional waste water treatment plant & explain working of each unit in brief. 8  
b) Design a suitable bar screen for design of 30 MLD. 8  

**OR**
8. a) Design a suitable grit chamber for a sewage treatment plant having capacity 18 MLD. 8  
b) Explain working of PST with neat sketch. 8
9. a) Explain the working of sludge drying beds with neat sketch. 8  
b) Explain in brief stabilization ponds. 8  

**OR**
10. a) What is activated sludge process? State & Explain various modification in activated sludge process. 8  
b) Explain working of trickling filter. Draw neat sketch state advantages & disadvantages. 8

\*\*\*\*\*