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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(CE) (2011 Onwards) (Sem.-6)

ENVIRONMENT ENGINEERING- II

Subject Code : BTCE-606

Paper ID : [A2293]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Q1 Answer briefly :**

- (a) Define sewage and sullage.
- (b) What do you understand by the term "*limiting velocity*" in sewers?
- (c) Under what circumstances do you prefer ovoid section sewer.
- (d) What is an inverted siphon?
- (e) Discuss the main function of anti-siphonage pipe.
- (f) Explain the meaning of the term strong sewage and weak sewage.
- (g) Discuss the main function of Activated sludge process.
- (h) Describe functions of stabilization ponds.
- (i) List few method of disposal of treated effluents.
- (j) What do you understand by advanced sewage treatment?

SECTION-B

- Q2 Explain the principle of working of a grease and oil trap. Mention the reasons for excluding grease and oil from waste water.
- Q3 Calculate the velocity of flow and discharge in a sewer of circular section having diameter 1.2m laid at a gradient of 1 in 500. The sewer runs partially full at 0.6 depth use manning's formula taking $n=0.012$
- Q4 Define BOD. Derive expression for first- stage BOD.
- Q5 Design a grit chamber for a maximum waste water flow of 10 mld, to remove particles upto 0.2mm diameter having specific gravity 2.65. The settling velocities of these particles found to range from 0.018 to 0.022m/s. Maintain a constant flow through velocity of 0.3m/s through the provision of proportional flow weir.
- Q6 Explain in brief the principles of working of stabilization ponds.

SECTION-C

- Q7 Explain the basic operation involved in the activated sludge process with the help of a flow diagram also explain various operational problems commonly encountered in activated sludge process.
- Q8 Design a septic tank for a hostel with the following data:
- (a) No of user=150
 - (b) Peak discharge=205
 - (c) Desludging period= 1 year
- Assume the percolation rate as 20 minutes per cm design dipression trench system for the disposal of the septic effluent.
- Q9 Explain the necessity of providing a man hole in a sewer line. Describe with the help of a neat sketch the components of manhole.