Total No. of Questions : 10]

SEAT No. :

P3520

[Total No. of Pages : 2

[4959]-1001
B.E. (CIVIL)
ENVIRONMENTAL ENGINEERING - II
(2012 Course) (Semester - I) (401001)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q1 or Q.2, Q3 or Q4, Q5 or Q6, Q7 or Q8,and Q9 or Q10.***
2) ***Figures to the right indicates full marks.***
3) ***Draw neat figures wherever necessary.***
4) ***Assume necessary data.***
5) ***Use of scientific calculator is allowed.***

Q1) a) State the procedure for DO fixation and hence explain the necessity of DO fixation during determination of DO in water. **[5]**

b) Find min velocity and gradient required to carry coarse sand particles of size 1.5 mm and specific gravity 2.65 through a sewer of diameter 0.9m. Assume constants beta = 0.04, f = 0.03 and N = 0.013. The sewer may be assumed to run half full. **[5]**

OR

Q2) a) Write Streeter-Phelps equation and explain the meaning each term involved in it. **[5]**

b) Write a short note on pumping of sewage. **[5]**

Q3) a) Design a bar screen for a peak flow of 25 MLD. **[5]**

b) What do you understand by trickling filter? Explain in detail with a neat sketch and biological processes involved in it. **[5]**

OR

Q4) a) Explain the purpose of providing grit chamber and give design criteria for grit chamber. **[5]**

b) Explain terms with respect to activated sludge process. **[5]**

i) HRT.

ii) SRT.

iii) MCRT.

iv) F/M Ratio.

P.T.O.

Q5) a) Explain with a neat sketch, the constructional features of a facultative stabilisation pond. **[8]**

Discuss the phytoremediation technology for waste water treatment.

b) Explain the principle of working of aerated lagoon. Also state the merits and demerits over aerated lagoon. **[8]**

OR

Q6) a) Differentiate between oxidation pond and aerated lagoon, with reference to HRT, organic loading method of aeration and operation cost. **[8]**

b) Explain root zone cleaning system for wastewater treatment. **[8]**

Q7) a) What do you understand by digestion of sludge? Differentiate between anaerobic and aerobic digestion. **[8]**

b) Write short note sludge drying bed. **[8]**

OR

Q8) a) What do you understand by sludge thickening? Enumerate various methods. Describe with the help of sketch gravity sludge thickener. **[8]**

b) Write short note on UASB process for waste water treatment. **[8]**

Q9) Give the range of important characteristics of waste water from following industry and draw a suitable flow diagram for treatment for each industry. **[18]**

a) Sugar industry.

b) Dairy industry.

c) Distillery industry.

OR

Q10)a) Write short note on. **[9]**

i) Equalization.

ii) Neutralization.

b) Discuss in brief various treatment processes adopted for treating industrial waste water. **[9]**