

K - 136

Total No. of Pages : 2

Seat No.	
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T.E. (Civil) (Part - III) (Sem. - VI) Examination, 2013
ENVIRONMENTAL ENGINEERING - II (Revised)

Sub. Code : 45546

Day and Date : Wednesday, 22 - 05 - 2013

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :**
- 1) Que. no. 1 is compulsory.
 - 2) Solve any two questions from remaining.

SECTION - I

Q1) Answer any THREE of following **[3 × 6 = 18]**

- a) Write design procedure for bar screen.
- b) Derive an expression for carbonaceous BOD.
- c) What are the operational problems of ASP? Discuss in detail.
- d) Explain the concept of septic tank.

Q2) a) Write details about secondary treatment and discuss aeration tank. [8]
b) An average operating data for conventional activated sludge treatment plant is as follows; **[8]**

i) Wastewater flow	-	50000 m ³ /d
ii) Volume of aeration tank	-	15500 m ³
iii) Influent BOD	-	200 mg/l
iv) Effluent BOD	-	25 mg/l
v) MLSS	-	3000 mg/l
vi) Effluent Suspended solids	-	40 mg/l

Based on information above, determine :

- i) Aeration period.
- ii) F/M Ratio
- iii) Percentage efficiency of BOD removal

Q3) a) Enumerate the various processes adopted for sludge treatment. Explain necessity of sludge treatment with detailed information of any one sludge treatment process. [8]
b) Design an oxidation ditch with respect to influent BOD, volume of ditch, HRT and oxygen requirement for a community of population 6000 persons, organic loading of sewage – 40 gm BOD per capita per day. Sewage flow of 160 lit/capita/ day and permissible BOD of treated water (effluent) - 20 mg/lit. **[8]**

P.T.O.

- Q4) a)** What is self purification of natural streams? Explain various actions involved in self purification. [8]
- b)** A wastewater effluent of 600 lit/s with BOD = 60 mg/l, DO = 2.5 mg/l and temperature of 25 °C enters river where the flow is 30 m³/sec and BOD = 3 mg/l, DO = 8.5 mg/l and temperature of 16 °C. Deoxygenation constant for a waste is 0.10 per day at 20 °C. The velocity of water in river downstream is 0.15 m/s and depth of flow is 1.5 m. Determine following after mixing of wastewater with river water : [8]
- i) Combined discharge
 - ii) BOD
 - iii) DO and
 - iv) Temperature

SECTION - II

- Q5) Answer following question :- (Compulsory) [4 × 5 = 20]**
- a) Explain the importance of MSW Management.
 - b) What are the various causes of air pollution?
 - c) Discuss Acid rain.
 - d) Write Noise level standards.
- Q6) a) Explain the functional elements of MSW management. [8]**
- b) Explain the different factors affecting composting. [7]**
- Q7) a) Explain the effect of air pollution on man, material and vegetations. [8]**
- b) Explain principal and working of Bag house filter with neat sketch. [7]**
- Q8) a) Explain various techniques used for Noise Pollution control. [8]**
- b) Write a detail note on EIA. [7]**

