Q.P. Code - P122-222-DSE/ESE

Total No. of Questions – [6] Total No. of Printed Pages: — [2]

G.R. No.	

May 2022 / INSEM+ENDSEM

F.Y.M. TECH. (WREE -CIVIL ENGG.) (SEMESTER-II)

COURSE NAME: ADVANCED WASTE ~~WARER~~ WATER TREATMENT

COURSE CODE: (CVPA12202)

(PATTERN 2020)

Time: [3 Hour] [Max. Marks: 60]

(*) Instructions to candidates:

1) All Questions are compulsory
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed.
4) Assume suitable data where ever required.

Q.1 **a)** List and explain(any two)the physical characteristics of wastewater or sewage. [5MARKS]

b) Discuss ,'Activated sludge process' with its line diagram and design steps [5MARKS]

Q.2 **a)** What do you mean by preliminary treatment of wastewater? Explain Grit chamber with sketch and its functions [5MARKS]

b) Summarize skimming tank with sketch and function. [5MARKS]

Q.3 **a)** Shortly write about chemical neutralization, coagulation, chemical precipitation and disinfection in wastewater treatment [5MARKS]

b) Explain in detail the use of oxidation pond in wastewater treatment. [5MARKS]

Q.4 **a)** Elaborate, ' aerobic process' with line diagram in biological treatment of wastewater [5MARKS]

b) Discuss aerated lagoons with its features and process. [5MARKS]

Q.5 Assuming mean cell residence time of 10 days, compute the returned sludge concentration for the following given data used to design a conventional activated sludge process for the treatment of domestic wastewater [10MARKS]

Given data:

(a) Daily avg. wastewater flow, $Q_{avg} = Q_0 = 20$ MLD= 20,000 M^3/Day.

(b) Sludge wasting flow, $Q_w = 150$ M^3/Day.

(c) Biomass concentration in reactor, X= 4000 mg MLVSS/L.

(d)Hydraulic retention time, $\Theta = 4$ hours

Q.6 Using Ranking's method and assuming suitable design criteria, design a, high rate trickling filter to treat 10 MLD flow of domestic wastewater having settled BOD of 200 mg/L. [10MARKS]

Given- Concentration of desired effluent BOD = 30.0mg/L

Depth of the filter media= 2.0m

Applied BOD to the filter is settled BOD