Total No. of Questions : 8]

P4748

SEAT No. :

[Total No. of Pages : 2

[5060]-550
M.E. (CIVIL) Water Res. & Env. Engg.
ENVIRONMENTAL CHEMISTRY & MICROBIOLOGY
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions***
2) ***Figures to the right indicate full marks.***
3) ***Use of electronic calculator is allowed.***

Q1) a) Explain Radiation and types of radiation. **[4]**

b) Calculate the PH of a buffer solution containing 0.01 M acetic acid & 0.01 M solution accetate. Then Calculate the pH after enough HCl is added to give a concentration of 0.001M **[6]**

Q2) a) Explain effects of air pollution on materials. Discuss the mechanism of these effects. **[6]**

b) Discuss the sampling and monitoring technique of air pollution. **[4]**

Q3) a) Explain Gaussian plume model & its behaviour. **[6]**

b) Differentiate between absorption & adsorption process. **[4]**

Q4) a) Convert 0.55 PPm No_2 to mg/m^3 at 290k & 100.00 KPa pressure. **[4]**

b) Discuss the methods of concentration determination of. air pollutants. **[6]**

Q5) a) Explain how environment is polluted by natural contaminants & particulate matter. **[4]**

b) Design a floatation thickener without pressurized recycle to thicken the solids in activated - sludge mixed liquor from 0.3-4% **[6]**

P.T.O.

Assume that the following conditions apply:

i) Optimum A/S ratio = 0.008 ML/mg

ii) Temperature = 20°C

iii) Air solubility = 18.7 ML/L

iv) Recycle - System pressure = 275 Kpa

v) Fraction of saturation = 0.5

vi) Surface - loading rate = 8L/m^2.min

vii) Sludge flowrate = 400 m^3/d

Q6) a) Write a short note on filter packing for frickling filters. **[4]**

b) Write a short note on substrate utilization in biological waste treatment. Give significance of F/M ratio. **[6]**

Q7) a) Explain AAS. with sketch. **[5]**

b) Explain Gas Cromatograph (G.C) **[5]**

Q8) a) Explain one method for recycling of waste water for. non potable use it's design parameters. & principle. **[5]**

b) Explain air quality models. Which are widely used & its applications. **[5]**