Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**
PCI7J004

7th Semester Regular/Back Examination 2019-20
INDUSTRIAL WASTE MANAGEMENT & DISPOSAL
BRANCH : CIVIL
Max Marks : 100
Time : 3 Hours
Q.CODE : HRB107

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 **Only Short Answer Type Questions (Answer All-10)** **(2 x 10)**

a) Write the factors the selection of particular process for treating the effluent of Industrial Waste Water
b) State the sources of Industrial Waste Water.
c) Differentiate between Dissolved air flotation and dispersed air flotation.
d) Write the physical Properties of Industrial Waste.
e) Name the safe Disposal methods of Waste Water.
f) What are the various polluting effluents generated by integrated steel plants?
g) Differentiate between nitrification and De-nitrification.
h) State the composition of steel industry waste water.
i) Write the factors the considered for selection of particular process for treating the effluent of Industrial Waste Water
j) What are the advantages of combined treatment of industrial waste water with domestic waste water?

Part- II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) Write the difference between Industrial Waste Water and Domestic Waste Water.
b) Explain in detail the effects of Industrial effluents on sewer and Natural water bodies
c) Enlist & Explain the Factors Affecting Adsorption.
d) Explain about pre and Primary Treatment of Industrial Wastewater.
e) Explain the process of Oil Separation by floatation method.
f) A diary unit releases 1000KLD effluent with 800mg/L BOD. How do you treat the sewage and What is its PE (Population Equivalent)?
g) The sewage of a town is to be discharged into a river stream. The quantity of sewage produced per day is 8MLD and its BOD is 260mg/l. If the discharge in the river is 200l/sec and its BOD is 6mg/l. Calculate the BOD of diluted water.
h) Enumerate the basic theories of Industrial wastewater management and Explain the strength reduction.
i) Design a ASP to treat 10,000m^3/day of sewage from an industry with a BOD of 200mg/L. Primary Clarifier removes 25% of the BOD. Assume Y = 0.5 kg/Kg and Kd = 0.05/day.
Take F/M in the range of 0.1-0.3, capacity of mechanical Surface Aerator is 30kg O_2/day. Also 1 kg of O_2 is required to satisfy 1kg BOD.
j) Enumerate the effects of discharging paper and pulp industrial wastes into water bodies or sewers
k) Draw the neat process flow sheet, highlight the origin and characterization of wastewater generated in textile industry.
l) How biodegradable organic materials are removed from Industrial effluent?

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Describe common methods of treatment of industrial waste water like, Volume Reduction, Strength Reduction, Neutralization, Equalization and Proportioning in detail. **(16)**

Q4 A city discharges 2000 liter per second of waste water into a river, whose minimum rate of flow is 3500 lit per second. The temperature of waste water as well as river water is 20°C. The 5day BOD of waste water at that temperature is 300mg/lit and that of river water is 1 mg/lit. The DO content of waste water is zero and that of the stream is 90% of the saturation D.O. If the minimum D.O.to be maintained in the stream is 4.0mg/lit. Find out the degree of waste water treatment, required. Assume the coefficient of de-oxygenation (KDD) as 0.1 and coefficient of re-oxygenation (KRR) as 04. **(16)**

Q5 With the treatment flow diagram explain the treatment processes adopted for treating textile wastewater. Discuss the effect of untreated/partially treated wastes from cotton textile mill on the receiving stream. **(16)**

Q6 Explain the Neat flow diagram a working of a CEPT. Also Explain the design procedure of Common Effluent Treatment Plants (CEPT). What are the situations in which it is used? **(16)**