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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 10,000m³/day of sewage from an industry with a BOD of 200mg/L. Primary Clarifier removes 25% of the BOD. Assume $Y = 0.5 \text{ kg/Kg}$ and $K_d = 0.05/\text{day}$.
Take F/M in the range of 0.1-0.3, capacity of mechanical Surface Aerator is 30kg O₂/day. Also 1 kg of O₂ 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 0.4. **(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)**