Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: APRIL 2018

(Regulation 2014)

Eighth Semester

CIVIL ENGINEERING

U14CETE54 : Industrial Waste Management

COURSE OUTCOMES

CO1: Suggest the industrial waste disposal methods on land and water environment.

CO2: Conduct waste audit in an industry and implement waste minimization techniques

CO3: Identify the impacts due to industrial effluents

CO4: Select suitable methods for low, medium and highly polluting industries

CO5: Suggest methods for safe disposal of hazardous wastes.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Matching type item with multiple choice code CO4 [K3]

List I (Process)	List II (Application)
A. Equalisation	i. Fluctuations in wastewater characteristics
B. Activated carbon adsorption	ii. pH control
C. Digestion	iii. Colour removal
D. Neutralisation	iv. Volume reduction

	A	B	C	D
a)	ii	i	iii	iv
b)	iii	iv	ii	i
c)	ii	iv	iii	i
d)	iii	i	ii	iv

2. Phosphorus can be removed by CO4 [K_1]

a) Sand filteration b) Chlorine addition

c) Carbon adsorption d) Ferric chloride addition

3. The byproducts from waste are CO3 [K_3]

1. Compost
2. Metal Scrap
3. Biogas
4. Plastic bottles

a) 1,3 b) 1,4
c) 1,2 d) 2,3

4. An example of a non-polluting industry is CO2 [K_2]

a) Paper and pulp industry b) Bio-fertilizer industry
c) Cement industry d) Leather industry

5. Assertion (A):Monitoring waste streams helps in strength reduction of wastes CO3 [K_2]

Reason (R): Accidental discharges into rivers are main causes of stream pollution

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A
c) A is true but R is false d) A is false but R is true

6. According to Ministry of Environment, highly polluting industries belongs to this category CO3 [K_2]

a) Orange b) Red
c) White d) Green

7. Write the sequence of preferable waste management option CO4 [K_3]

1. Disposal
2. Reuse
3. Treatment
4. Recovery

a) 2-3-4-1 b) 1-3-2-4
c) 3-4-2-1 d) 4-1-3-2

8. Zero discharge treatment means CO4 [K_4]

a) No effluent is discharged b) Minimum effluent is discharged
c) Complete treatment and Recycling d) No treatment is done

9. Assertion (A): Recovery and reuse are very good waste management options CO3 [K_4]

Reason (R): Composting produces a valuable material in addition to waste management

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A
c) A is true but R is false d) A is false but R is true

10. Secure landfills require all but one of the following CO5 [K_2]

a) Groundwater monitoring b) Post closure activities
c) Single liners d) Leachate collecting system

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11.	What is the effect of heated water when discharged into streams?	CO1	[K_2]
12.	Why do certain locations have stringent discharge requirements?	CO1	[K_2]
13.	What is the significance of leaner production?	CO2	[K_2]
14.	Write the efficient disposal standard for any four parameters.	CO3	[K_3]
15.	Write the typical characteristics of pollutants from a pharmaceutical plant.	CO4	[K_1]
16.	How will you treat the scale pit effluent from a steel plant?	CO4	[K_2]
17.	Write a notes on equalization of waste water.	CO3	[K_1]
18.	What are common effluent treatment plants?	CO2	[K_1]
19.	Give any four examples of wastes which are hazardous in nature.	CO5	[K_1]
20.	Define: secure landfill.	CO5	[K_2]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	Classify the possible constituents of industrial wastes that can cause pollution. With examples briefly discuss the effects and difficulties caused by these categories of pollutants.	CO1	[K_2]
22.	Explain how waste water could be used for irrigation. Also discuss about preventive measures and health aspects.	CO1	[K_2]
23.	Enumerate the basic theories of industrial wastewater management with reference to strength and volume reduction.	CO4	[K_2]
24.	Discuss the application of zero discharge technology based on ‘3 R’ principle for pulp and paper industry.	CO2	[K_2]
25.	Write in detail about the ill effects of disposal of industrial effluents on land, streams and sewage treatment plants.	CO3	[K_2]
26.	Discuss in detail the different methods available for removal of dissolved impurities.	CO4	[K_2]
27.	Explain the physic-chemical treatment methods of hazardous wastes.	CO5	[K_2]

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