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Question Paper Code: U9974

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Open Elective

Chemical Engineering

21UCH974 – INDUSTRIAL WASTE MANAGEMENT

(Regulations 2021)

(Common to All Engineering Branches)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Wastewater from different sources like bathrooms, kitchens and wash basins is called _____. CO1-U
a) Sewage b) Garbage c) Sullage d) Discharge
2. Identify the sector to which the forestry belongs to _____. CO1-U
a) Primary sector b) Secondary sector
c) Quaternary sector d) Quinary sector
3. _____ is a waste disposal method where solid organic wastes are converted to the residue and gaseous products through combustion. CO1-U
a) Incarnation b) Incineration c) Incarceration d) Incubation
4. Greenhouse gases are those that absorb and emit infrared radiation. Examples include _____. CO1-U
a) Nitrogen b) Ozone c) Argon d) None of these
5. The gas responsible for acid rain is _____. CO1-U
a) NO₂ b) CO₂ c) SO₂ d) CH₄
6. Smog is a mixture of _____. CO1-U
a) Water and air b) Smoke and dust
c) Smoke and fog d) Fog and dust

7. The main sources of Arsenic in water are _____. CO1-U
- a) Floods b) Fertilizers
- c) Industrial waste b) Both b and c
8. In most freshwater lakes, the algal productivity is limited by the availability of which of the following inorganic ions? CO1-U
- a) Carbon c) Nitrogen d) Phosphorus d) All of the above
9. From the following, which one is an example of a chemical reaction? CO1-U
- a) Grapes get fermented b) Breakdown of food
- c) Formation of curd d) All of the above
10. Sodium and chlorine are reacted, and as a result, sodium chloride is formed, which is also called table salt. What option gives the reactants and products of the reaction? CO1-U
- a) Reactants – sodium; products – chlorine
- b) Reactants – sodium and table salt; products – chlorine
- c) Reactants – tables salt; products – sodium and chlorine
- d) Reactants – sodium and chlorine; products – sodium chloride

PART – B (5 x 2= 10 Marks)

11. How industrial effluents discharge affects streams? CO2-App
12. Give the advantage of waste management audit. CO2-App
13. How effluent from textile industry is treated? CO2-App
14. What is chemical oxidation? CO1-U
15. What is the concept of solidification? CO1-U

PART – C (5 x 16= 80 Marks)

16. (a) Explain the classification of industries on the basis of different criteria giving illustrative example of each type. CO1-U (16)
- Or
- (b) Explain in detail with illustration the Characteristics of industrial wastes. CO1-U (16)

17. (a) Discuss the concept of waste audits, their objectives, methodologies, and significance in improving waste management practices CO2-App (16)
- Or
- (b) Discuss the Volume & Strength Reduction for cleaner production. CO2-App (16)
18. (a) Elaborate briefly about the treatment is used for waste from sugar industry. CO1-U (16)
- Or
- (b) Explain briefly about the wastewaters from fertilizer Industry. CO1-U (16)
19. (a) Discuss briefly about the dewatering process. CO2-App (16)
- Or
- (b) Discuss the neutralization technology. CO2-App (16)
20. (a) Discuss secure land fill. CO1-U (16)
- Or
- (b) Describe hazardous waste management in detail. CO1-U (16)

