

2023
B.A./B.Sc.
Sixth Semester
DISCIPLINE SPECIFIC ELECTIVE – 3
CHEMISTRY
Course Code: CHD 6.11
(Industrial Chemicals & Environment)

Total Mark: 70
Time: 3 hours

Pass Mark: 28

Answer five questions, taking one from each unit.

UNIT-I

1. (a) Explain the separation of argon from second fraction with a neat diagram. Mention two uses of argon. 4+2=6
(b) Give one method of preparation of sulphur dioxide in large scale. Discuss its uses and hazards. 1+2+2=5
(c) Explain zone refining method for the purification of ultra-pure metal. 3

2. (a) Discuss the manufacture of hydrogen gas in large scale by electrolysis of water with diagram. Mention its uses and hazards. 4+2+2=8
(b) Write short notes on the following: 3×2=6
 - (i) Hazards of carbon monoxide
 - (ii) Uses of helium

UNIT-II

3. (a) Define pollutants. Mention four major gaseous pollutants. 1+2=3
(b) What are the effects of air pollution? 4
(c) Discuss the causes and effects of ozone depletion. 6
(d) What is PAN? 1

4. (a) What is smog? What is the difference between classical smog and photochemical smog? Discuss its mechanism in environment. 1+2+3=6

- (b) Write a short note on global warming. 3
- (c) What are the natural and harmful sources of carbon monoxide?
Explain how it binds to haemoglobin. 3+2=5

UNIT-III

5. (a) Discuss how to carry out water sampling for measuring water pollutants. 4
- (b) Discuss the sources of water pollutants with reference to infectious agents and plant nutrients. 2+2=4
- (c) Write notes on water purification method by reverse osmosis (RO). 6
6. (a) What are the causes of disagreeable odour in water? Discuss how to carry out the test. 4
- (b) Write notes on industrial effluents and treatment options of “dairies”. 4
- (c) Define DO and BOD. Discuss how to carry out their tests. 2+4=6

UNIT-IV

7. (a) Give an account on the sources of water pollutants with reference to inorganic minerals and chemical compounds. 5
- (b) Discuss the causes and the tests of alkalinity in water. 5
- (c) Discuss the textile industrial effluents and treatment options. 4
8. (a) Write brief notes on incineration of solid waste. 4
- (b) Explain the biogeochemical cycle of nitrogen and sulphur. 3+3=6
- (c) Give the uses and hazards of oxygen. 2+2=4

UNIT-V

9. (a) Discuss the importance of biocatalysis in green chemistry and chemical industry. $2\frac{1}{2}+2\frac{1}{2}=5$
- (b) Explain the nuclear disaster and its management. 5
- (c) Write short notes on the following: 2+2=4
- (i) Geothermal energy (ii) Hydro energy

10. (a) Give the differences between nuclear fission and fusion. 5
- (b) Write short notes on sources of energy. $2\frac{1}{2} \times 2 = 5$
- (i) Coal (ii) Petrol
- (c) What do you mean by nuclear binding energy? Explain the principle of nuclear reactor. $1 + 3 = 4$
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