

2023
B.A./B.Sc.
Fifth Semester
DISCIPLINE SPECIFIC ELECTIVE – 2
CHEMISTRY
Course Code: CHD 5.21
(Green Chemistry)

Total Mark: 70
Time: 3 hours

Pass Mark: 28

Answer five questions, taking one from each unit.

UNIT-I

1. (a) Explain the main idea behind green chemistry. 4
(b) What are the obstacles in the pursuit of the goals of green chemistry? 5
(c) Explain in detail about the application of atom economy in addition and substitution reactions with relevant examples. 5
2. (a) Write a short essay on twelve principles of green chemistry and its application. 7
(b) Explain the designing a green synthesis using the principle of green chemistry. 3
(c) Write a note on prevention of waste and by-products in green chemistry. 4

UNIT-II

3. (a) Discuss the alternative sources of energy with respect to microwave and ultrasonic energy in green chemistry. 6
(b) Write a note on population prevention hierarchy. 5
(c) What are the preventions to be taken to minimise the toxic products in green chemistry? 3

4. (a) Write a note on minimization of hazardous toxicity in terms of green chemistry. 6
- (b) What are super critical fluid? Explain its application in green chemistry. 4
- (c) Explain the role of water and ionic liquids as solvent for organic reactions. 4

UNIT-III

5. (a) What do you mean by Bhopal gas tragedy? Explain the greener alternative method to avoid such tragedy. 6
- (b) What are the precautions to be taken during the selection of starting materials in green chemical reaction? 4
- (c) Write a short note on the application of various solvent less process. 4
6. (a) Explain in detail about the use of catalytic reagents in preference to stoichiometric reagents. 4
- (b) Give brief notes on the following terms with relevant examples. 2×4=8
- (i) Asymmetric catalysis
- (ii) Principle of ISD
- (iii) Homogenous catalysis
- (iv) Heterogeneous catalysis
- (c) Briefly explain the use of blocking or protecting group to avoid unnecessary derivatives in chemical reactions. 2

UNIT-IV

7. (a) Why are microwave assisted reactions more preferable than traditional method? 6
- (b) Explain the green synthesis of the following 2×2=4
- (i) Adipic acid
- (ii) Catechol
- (c) Write a note on synthetic azo pigments. 4
8. (a) What is TBT? How is TBT useful in marine biological fouling? 5
- (b) What are surfactants? Explain the dry cleaning using PERC give the adverse effect of PERC. 4

- (c) Write short notes on the following terms: 2½×2=5
- (i) Right fit pigments
 - (ii) Antifouling agent

UNIT-V

9. (a) Give a comparative account on green chemistry and environmental chemistry. 4
- (b) Write a note on oxidation reagents and catalysts. 4
- (c) Write an essay on green chemistry in sustainable development. 6
10. (a) Explain the proliferation of solventless reaction. Give examples. 6
- (b) What is combinatorial green chemistry? Explain. 4
- (c) Discuss the biomimetic multifunctional reagents. 4
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