

(7 pages)

Reg. No. :

Code No. : 30485 E Sub. Code : CSCH 31

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024.

Third Semester

Chemistry

Skill Based Subject — GREEN CHEMISTRY

(For those who joined in July 2021 and 2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The following one is an example for green chemistry
(a) Carpete
(b) Bioplastics
(c) Sublimation
(d) Rubber

2. The goal of green chemistry is _____.
(a) to design chemical products or process that maximise profits
(b) to eliminate or reduce the environmental pollution by developing harmless products
(c) to design chemical product or process that work most efficiently
(d) to utilise non-renewable energy
3. _____ is a preferred green solvent.
(a) Water (b) Methanol
(c) Ethyl acetate (d) Toluene
4. A desirable green solvent should be _____.
(a) Costly
(b) Toxic
(c) Cheap and ecofriendly
(d) Synthetic
5. Which of the following is not a category of catalyst?
(a) Homogeneous (b) Heterogeneous
(c) Enzymatic (d) Artificial

6. The following one is the polymer supported catalyst _____.
- (a) Clayzic (b) Hydrotakite
(c) Amberlyst 21-ml (d) TAML
7. Oxidation of toluene with KMnO_4 gives _____.
- (a) Phthalic acid (b) Benzoic acid
(c) Toluic acid (d) Phenol
8. The solvent used in the microwave assisted Hofman elimination reaction
- (a) Water
(b) Water-Chloroform mixture
(c) Alcohol
(d) Benzene
9. Who is the father of green chemistry?
- (a) John-C-Warner (b) Paul-T.Anastas
(c) Chauvin (d) Richard Schrock
10. What is the main source for generation of wind?
- (a) Sun (b) Uneven land
(c) Rain (d) Season

Page 3 Code No. : 30485 E

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Define green chemistry. Explain the goal of green chemistry in the Present Context.
- Or
- (b) Write a note on "Concept of atom economy".
12. (a) Explain the dry cleaning process using super critical CO_2 .
- Or
- (b) Explain neutral and acidic ionic liquids. How will you synthesis ionic liquids?
13. (a) Explain the role of polymer supported catalyst.
- Or
- (b) Discuss the enzyme catalysed hydrolytic process with examples.
14. (a) Explain the following reactions assisted by microwaves :
- (i) Fries rearrangement
(ii) Diels Alder Reaction.

Or

Page 4 Code No. : 30485 E

[P.T.O.]

(b) Explain the following reactions assisted by ultrasound :

- (i) Coupling reactions and
- (ii) Cannizzaro reactions.

15. (a) Define green energy and its types of green energy.

Or

(b) Write a short note on "Wind energy".

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Calculate the atom economy in the following types of reaction with an example each :

- (i) Addition and
- (ii) Elimination reaction.

Or

(b) Discuss in detail about twelve principles of green chemistry with their explanation.

Page 5 Code No. : 30485 E

17. (a) Write notes on :

- (i) Hydrogenation
- (ii) Hydroformylation.

Or

(b) Write down the preparation properties and applications of super critical carbon dioxide.

18. (a) Define Biocatalyst. Describe in detail the microbial oxidation and reduction reactions with examples.

Or

(b) Write notes on :

- (i) TAML Catalyst.
- (ii) Per fluorinated catalyst.

19. (a) Explain the following reactions assisted by microwaves :

- (i) Claisen Rearrangement
- (ii) Hoffman Elimination.

Or

(b) Explain saponification and esterification reactions carried out using ultra sound techniques.

Page 6 Code No. : 30485 E

20. (a) Discuss the applications of solar energy.

Or

(b) Write a short note on :

(i) Bio gas

(ii) Bio fuel.
