

Reg. No. :

Code No. : 20026 E Sub. Code : SECH 6 A/
AECH 61

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

Sixth Semester

Chemistry

Major Elective — GREEN CHEMISTRY

(For those who joined in July 2017–2020)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Green chemistry is also called as _____
- (a) Life chemistry
 - (b) Environmental chemistry
 - (c) Organic chemistry
 - (d) Sustainable chemistry

8. The solvent used in the microwave assisted Hofmann elimination reaction
- (a) water
 - (b) alcohol
 - (c) benzene
 - (d) water-chloroform mixture
9. Effective brominating agent use in green chemistry is
- (a) Br₂
 - (b) PBr₃
 - (c) PNBs
 - (d) NBS
10. The first listed of the principles of green chemistry is
- (a) prevent waste
 - (b) catalysis
 - (c) atom economy
 - (d) benign solvent

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Explain the following :
- (i) Yield and effective mass yields
 - (ii) Atom economy.

Or

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2. Carbon efficiency is introduced by
- (a) Bary Trost
 - (b) Glaxo Smithkline
 - (c) Hudlicky
 - (d) Paul Anastas
3. Benzene a _____ substance used as solvent in many industries.
- (a) Carcinogenic
 - (b) Flammable
 - (c) Non-flammable
 - (d) Biodegradable
4. The green solvent maximizes the atom
- (a) molecular weigh
 - (b) electronic configuration
 - (c) velocity
 - (d) efficiency
5. Select the catalyst used in the synthesis of polymer from soyabean oil
- (a) TAML
 - (b) Al₂O₃
 - (c) Si₂O₃
 - (d) CaCO₃
6. The example for oxidoreductase biocatalyst is
- (a) Carboxylases
 - (b) Aldolases
 - (c) Dehydrogenase
 - (d) Ketolase
7. Hydrolysis of benzyl chloride gives
- (a) Benzal alcohol
 - (b) Benzyle alcohol
 - (c) Phenol
 - (d) Butyl alcohol

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- (b) Calculate the atom economy in addition and substitution reactions with an example each.
12. (a) Explain the principle and procedure of supercritical fluids.
- Or
- (b) Discuss polymer supported reagents with examples.
13. (a) Explain oxidation green catalyst with example.
- Or
- (b) Discuss solid supported catalyst with examples.
14. (a) Give the green synthesis of following compounds (i) adipic acid (ii) ibuprofen.
- Or
- (b) Explain Diels-Alder reaction.
15. (a) Discuss the choice of materials in green chemistry with suitable examples.
- Or
- (b) Write notes on material reagents.

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[P.T.O.]



PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Describe the calculation of (i) Atom economy
(ii) mass intensity and mass productivity
(iii) carbon efficiency.

Or

- (b) Discuss briefly "the concept of selectivity".

17. (a) Describe various chemical reactions in supercritical water and near critical water regions.

Or

- (b) Discuss the applications of supercritical carbondioxide.

18. (a) Define TAML Catalyst. Give its structure, properties and applications.

Or

- (b) Write the examples and preparation of the following. (i) modified biocatalyst
(ii) mesoporous supports by liquid crystal templating.

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19. (a) Give the synthesis of following compounds
(i) acetaldehyde (ii) citral.

Or

- (b) Explain the following reactions assisted by microwave. (i) Hofman elimination
(ii) Claisen rearrangement.

20. (a) Describe the twelve principles of green chemistry with suitable examples.

Or

- (b) Explain the important role of green chemistry in day to day life.

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