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Reg. No. :

Code No.: 20079 E Sub. Code: AECH 61

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Sixth Semester

Chemistry

Major Elective – GREEN CHEMISTRY

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- Green chemistry needs to minimize the formation of _____.
(a) reactants (b) products
(c) by-products (d) all the above
- _____ selectivity means orientation control.
(a) regio (b) enantio
(c) chemo (d) diastereo

- _____ can be used to extract analytes from samples.
(a) liquid (b) super critical fluids
(c) solids (d) gases
- _____ is ideal for various applications because it become supercritical under relatively mild conditions.
(a) CO₂ (b) Br₂
(c) H₂S (d) HCl
- _____ acting as acid catalysts in Friedal-crafts reactions.
(a) bromine (b) zeolites
(c) nitrogen (d) argon
- TiO₂ is used as a _____ catalyst in removing water pollutants.
(a) acid (b) base
(c) photo (d) bio
- The greener synthesis of ibuprofen by _____ can dramatically reduce the waste product generation.
(a) BVC (b) BHC
(c) GHC (d) DTTP

8. In the biocatalytic was adipic acid can be synthesized from _____.
- (a) D-glucose (b) L-glucose
(c) Mannose (d) all the above
9. _____ catalytic reagents are superior to stoichiometric reagents in a chemical synthesis.
- (a) specific (b) first class
(c) selective (d) effective
10. The substance to be used in chemical reactions should not be _____.
- (a) harmless (b) acidic
(c) basic (d) hazardous

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 need for green chemistry.
- Or
- (b) Write short notes on substitution reaction in atom economy.

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12. (a) What are supercritical CO₂ and explain it.
- Or
- (b) Give any five applications of super critical fluids.
13. (a) Explain the solid supported catalyst.
- Or
- (b) Write short notes on acid catalyst.
14. (a) Write short notes on the green synthesis of catechol.
- Or
- (b) Explain the exudation of toluene.
15. (a) Mention the choice of starting materials in green chemistry.
- Or
- (b) Write short notes on analgesic drugs.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Give an account of the concept of atom economy.
- Or
- (b) Mention and explain the various types of selectivity.

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17. (a) (i) What are the advantages of super critical fluids?

(ii) Explain any one green solvent.

Or

(b) Explain

(i) Hydrogenation

(ii) Hydroformylation.

18. (a) Explain

(i) Neutral templating method

(ii) Microbial reduction.

Or

(b) Write short notes on

(i) TAML catalyst

(ii) Oxidation catalyst.

19. (a) Explain

(i) Hoffmann elimination

(ii) Fries rearrangement.

Or

(b) Write short notes on the green synthesis of

(i) Adipic acid

(ii) Paracetamol.

20. (a) Discuss the twelve principles of green chemistry.

Or

(b) Explain

(i) Versatile bleaching

(ii) Green chemistry in sustainable development.