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Reg. No. :

Code No. : 6529

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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2021

First Semester

Chemistry

Elective – GREEN CHEMISTRY – TECHNIQUES AND
APPLICATIONS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 1 = 10$ marks)

Answer ALL questions.

Choose the correct answer :

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

2. One of the principles of green chemistry says that to produce _____ goods.
- (a) Harmful
 - (b) Commercial
 - (c) Safer
 - (d) Most used
3. Which one of the following is used as Phase-transfer catalyst?
- (a) primary amine
 - (b) quaternary ammonium salt
 - (c) tertiary amine
 - (d) secondary amine
4. Which of these enzymes are not proteinaceous?
- (a) Kinases
 - (b) Endonucleases
 - (c) Ligases
 - (d) Ribozymes
5. The _____ reactions involves reorganisation of the atoms of the molecules.
- (a) Addition reactions
 - (b) Rearrangement reactions
 - (c) Reorganised reactions
 - (d) Elimination reactions

6. The following is often referred to as the universal solvent and is a preferred green solvent
- (a) Water (b) Methanol
(c) Ethyl Acetate (d) Benzene
7. _____ is the fundamental advantage of the sono chemistry in organic synthesis without solvents.
- (a) High yields
(b) High energy requirements
(c) Use of solvents
(d) High wastes
8. Green chemistry synthesis could involve which of the following?
- (a) High temperature
(b) Dichloromethane
(c) Fossil fuels
(d) Microwave
9. Which of the following converts energy from the combustion of fuel directly to the electrical energy?
- (a) Ni-Cd cell
(b) Dynamo
(c) Fuel cell
(d) Electrolytic cell

10. Which of the following is continuously replaced in a fuel cell?
- (a) Oxidiser
 - (b) Fuel
 - (c) Both fuel and oxidizer
 - (d) None of the above

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Explain waste minimization and atom economy.

Or

- (b) Explain reduction of non-renewable raw materials usage.

12. (a) Discuss the microbial production of ethyl alcohol.

Or

- (b) Explain the importance of phase transfer catalysis.

13. (a) Explain the role of solvents in synthesis.

Or

- (b) Discuss about the tunable solvent systems.

14. (a) What are photochemical reactions? Give example.

Or

- (b) Explain photochemical ring closure of dienes.

15. (a) What is renewable energy? Explain types of renewable energy resources.

Or

- (b) What are solar cells? Explain basic principle of solar cells. What are their applications?

PART C — ($5 \times 8 = 40$ marks)

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

Each answer should not exceed 600 words.

16. (a) Discuss the process intensification.

Or

- (b) Explain the energy efficient improvements.

17. (a) Explain the use of crown ethers in organic synthesis.

Or

- (b) Explain the role of enzymes as catalysts.

18. (a) What are ionic liquids? Explain their uses and disadvantages.

Or

- (b) Explain the significance of super critical carbon dioxide.

19. (a) What are photoreduction reactions? Give example and mechanism.

Or

- (b) Explain use of Microwaves in green chemistry. Discuss merits and demerits of microwaves in green chemistry.

20. (a) What are Fuel cells? What are the types of Fuel cells? Explain their applications.

Or

- (b) What are Biofuel cells? How does biofuel cell function? Explain their applications.