

- (b) Describe how polylactic acid is made from corn. Why is it better than traditional plastic? Write about the uses of polylactic acid. (8,7)

5. (a) Elaborate the following (any two) :

- (i) Waste prevention hierarchy diagram
- (ii) Cradle to cradle (C₂C) approach
- (iii) Renewable feedstock

- (b) Define ionic liquids. What are the advantages of ionic liquids over the conventional solvents?

- (c) How does green energy relate to sustainability? Explain with suitable example. (5,5,5)

6. Write short notes on **any three** of the following :

- (a) Green solvent
- (b) Safer antifouling agent
- (c) Solvent free synthesis
- (d) Catalysis and green chemistry (5,5,5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5047

J

Unique Paper Code : 2174001201

Name of the Paper : GE: GREEN CHEMISTRY

Name of the Course : **All Undergraduate Courses
Except with Chemistry
Discipline**

Semester : II

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FOUR** questions out of six.
3. Use of calculator is permitted.

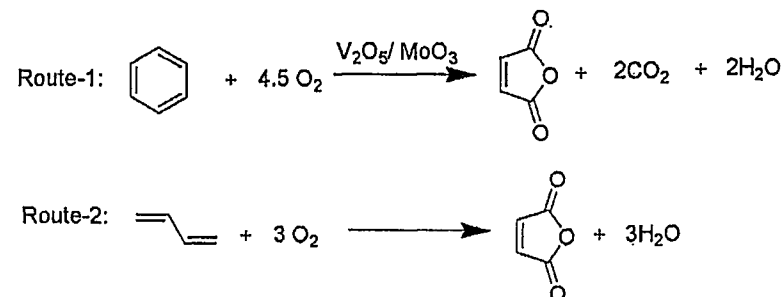
1. (a) Fill in the blanks of the following (any five) :

- (i) Addition reactions are atom _____ reactions.
- (ii) Bhopal gas tragedy was caused due to the accidental release of _____.
- (iii) The full form of EPA is _____.
- (iv) Rightfit azo-pigment contains _____ metal ion.
- (v) The use of solar energy is covered under green chemistry principle no _____.
- (vi) Ionic liquids are also known as _____ solvents.

(b) Describe in detail the history of development of twelve principles of green chemistry.

(c) Explain the concept of waste prevention and E-factor. (5,5,5)

2. (a) What is Atom Economy? Calculate the '% Atom Economy' and comment on the greenness of the following two reactions for the synthesis of maleic anhydride.



(b) Why is it important to study the twelve green chemistry principles whenever working with chemicals? (10,5)

3. (a) "What you don't have cannot harm you" is referred to which principle of green chemistry? Explain.

(b) "Green chemistry and environment chemistry are different." Justify this statement.

(c) What is the third green chemistry principle? Describe the Flixborough disaster and provide a safer method for cyclohexanol production. (5,5,5)

4. (a) What is meant by the term scCO_2 ? What are the uses of scCO_2 ? Explain about how the fluoro-containing surfactant works with scCO_2 to dry clean clothes.