

- (c) What do you understand by principle 8 of Green Chemistry that unnecessary derivatizing should be avoided whenever possible? Also comment 'one can avoid protecting groups by using enzymes'.

(5,5,5)

(1000)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 6048

H

Unique Paper Code : 2174001201

Name of the Paper : GE: Green Chemistry

Name of the Course : B.Sc. (Hons) / B.Sc. (Prog.)

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 **Four** questions out of **six**.
3. All parts of a question should be attempted together.
4. Each question carries **15** marks.

P.T.O.

1. (a) Fill in the blanks with suitable word(s)

(i) Atom economy is a measure of _____
of a chemical reaction.

(ii) A chemical process with an E-factor of 1
creates _____ waste than a factor of
25.

(iii) Risk = (function) _____ X exposure.

(iv) Biopolymers exemplify Green Chemistry
principle no. 10 which is _____.

(v) The critical pressure and critical
temperature of scCO_2 _____.

(b) Explain briefly each level of Waste Prevention
Hierarchy.

5. (a) What is ozone layer? Discuss its role. Name the
chemicals which causes depletion of ozone layer
and explain the various reactions involved.

(b) Write notes on **(any two)** :

(i) Asymmetric catalysis

(ii) Rightfit pigments

(iii) C_2C approach of production

(c) Explain any two analytical techniques for real-
time analysis of a reaction. (5,5,5)

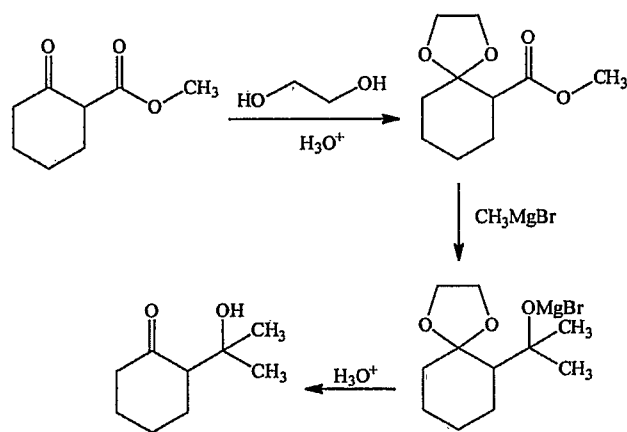
6. (a) Draw the phase diagram of CO_2 . How is liquid
 CO_2 generated in the laboratory? Name the
compound extracted from orange peel using liquid
 CO_2 .

(b) Differentiate between homogenous and
heterogeneous catalysts using appropriate
examples.

(b) Give an example of:

- (i) Biocatalyst
- (ii) Solventless process
- (iii) Photocatalyst
- (iv) Green Plastics
- (v) Chemical reaction using ionic liquids as solvent

(c) Explain, whether the following chemical synthesis can be considered as "Green"?



(5,5,5)

(c) Match the following :

I	Flixborough Disaster	i	Tributyl Tin
II	Adipic acid	ii	MIC
III	Atom Economy	iii	Cyclohexanol
IV	Bhopal Gas Tragedy	iv	D-Glucose
V	Antifouling Agent	v	Barry M. Trost

(5,5,5)

2. (a) In the context of Bhopal gas tragedy, answer the following questions :

- (i) Discuss the cause of disaster by using the chemical reaction pathway.
- (ii) Discuss the greener route that avoids the potential hazards of the chemical compound responsible for the disaster.

(b) Define Green Chemistry. What is its need in chemistry and chemical processes? How is green chemistry different from environmental chemistry?

(c) What is meant by an 'antifoulant'? List the environmental problems associated with the use of TBTO as an antifoulant. How are these problems tackled by the use of green chemistry?

(5,5,5)

3. (a) Name one biosolvent obtained from renewable feedstock. Why are biosolvents considered as green? Give any one application of biosolvent being used as a green solvent.

(b) Why catalytic amount of reagent is favoured over the stoichiometric amount of the same reagent? Explain with suitable examples.

(c) What are the advantages of thiamine catalysed benzoin condensation over the conventional benzoin condensation? Write down the reaction involved, shedding light on the principles involved.

(5,5,5)

4. (a) Calculate atom economy of the following reaction :

