

- (b) Discuss the innovations in pharmaceutical drugs during the last 5 years based on Presidential Green Chemistry Challenge Awards.
- (c) What are the different metrics related to waste in a process? (5.5,4,3)
8. (a) Outline the reasons for Flixiborough accident. Suggest the greener alternative to the synthesis of cyclohexanol.
- (b) Define sonochemistry. What do you understand by sonochemical switching?
- (c) Give the green synthesis of diisocyanate. (4.5,4,4)
9. Write the short notes on (any three):
- (i) Combinatorial chemistry.
- (iii) Ionic Liquids.
- (iii) Phase Transfer Catalysts
- (iv) Green Solvents
- (v) Bio-diesel (12.5)

(200)

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5853

E

Unique Paper Code : 32177908

Name of the Paper : DSE – Green Chemistry

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

Semester : VI

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Paper having 9 questions out of these you will attempt any 6 questions.
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1. (a) Explain basic factors involved in calculating risks.
 - (b) DCOI is not bioaccumulative. Explain.
 - (c) Design a synthesis with suitable example where the protection of one of the functional groups is done to carry out the reaction and a synthesis without using a protecting group.

P.T.O.

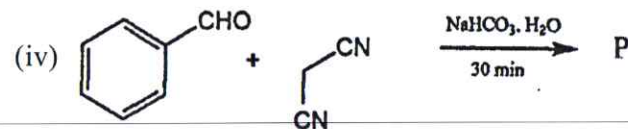
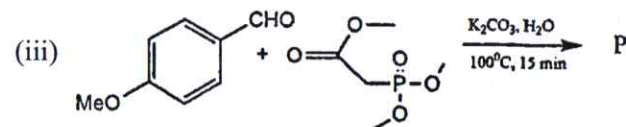
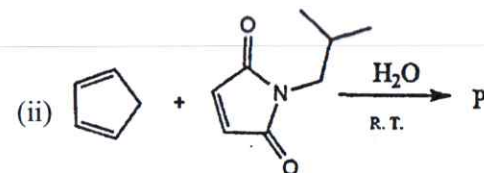
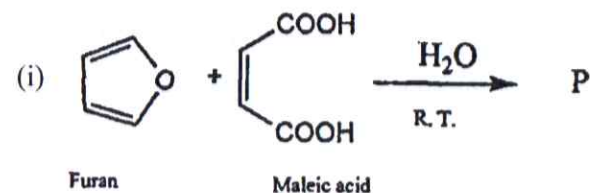
- (d) Discuss briefly the problems associated with conventional synthesis of adipic acid and BHT. Give the alternate green method of synthesis of adipic acid. (2.5,3,3,4)

2. (a) Fill in the blanks :

- (i) An ultrasonic transducer converts electrical energy into _____ energy.
- (ii) Atoms corresponding to blocking groups are not found in the final product, which is unfavorable result in _____.
- (iii) _____ tragedy was a gas leak incident in 1984 at the Union Carbide India Limited pesticide plant.
- (iv) _____ is designed as environmentally safe marine antifoulant.
- (v) A chemical process with an E factor of 2 creates _____ waste than of E factor of 20.

(b) Compare between the following :

- (i) Heterogeneous and homogeneous catalysts.

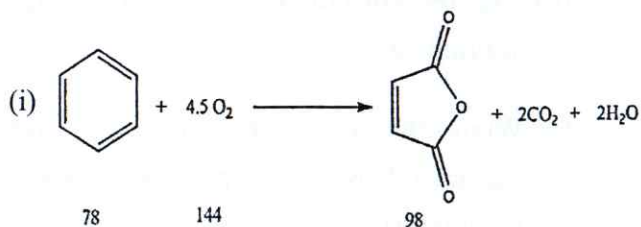


(4.5,8)

7. (a) Give advantages of catalytic reaction over stoichiometric reaction. What is the important use of polyacrylate (PAC)? How does it create burden on environment? Can you suggest an eco-friendly method?

(ii) Traditional pigments and rightfit pigments.

(c) Calculate the atom economy for the following reactions.



(5,4,3.5)

3. (a) Write the twelve principle of green chemistry and discuss any two by taking suitable examples.

(b) Give the importance of asymmetric catalysis correlating the defects produced in babies when drug thalidomide was given to the pregnant woman.

(c) Name the product responsible for the Bhopal Gas Tragedy. How do you apply the principle what you don't have can't harm you? (6,3,3.5)

P.T.O.

4. (a) How conventional antifoulant are posing environmental threat? How can that be overcome using green methodology? Explain the example.
- (b) Explain how cradle to cradle recycling concepts is applied to carpets.
- (c) Write the name of natural product which is extracted from orange peel using liquid CO_2 . What is supercritical CO_2 . Discuss it. (4,4,4.5)
5. (a) What are Rightfit pigments? List the toxicological problems associated with the conventional colourants.
- (b) Differentiate between green chemistry and environmental chemistry.
- (c) Why biocatalysts are termed as green catalysts? (5,4,3.5)
6. (a) Provide the green route for the synthesis of polylactic acid? Give its applications.
- (b) Draw the structure of products and write the name of reaction.