

D 6819-A

(Pages : 3)

Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2016

(CUCSS)

Chemistry

CH 3C 11—REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY

(2015 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Section A

Answer all questions.

Each question carries 1 weightage.

1. Identify the product arising from the reaction of 1-methoxycyclohex-1-ene with O_3 in presence of dimethylsulfide.
2. How can 4-*tert*-butylcyclohexanone be selectively reduced to *trans*-4-*tert*-butylcyclohexanol predominantly ?
3. Identify the isomeric products that can be expected from styrene by its reaction with 9-BBN followed by oxidation with alkaline hydrogen peroxide. Which would be the major product and why ?
4. Write the structure of crown ethers that would complex with Na and K ions selectively. What are the synthetic uses of these complexes ?
5. Describe the mechanism of free radical polymerisation reactions.
6. Explain the general structure of block and graft copolymers.
7. How can 1-azetidine carboxylic acid be obtained from γ -aminobutyric acid ?
8. Write a method by which styrene can be converted to 2-phenyloxirane.
9. Write a synthesis of indole.
10. Write the mechanism of Wolff rearrangement.
11. Upon reaction with perbenzoic acid, 4-MeO-C₆H₄-CO-Ph gets converted to mainly PhCO-O-C₆H₄-OMe-4. What is the mechanism ?
12. What product would form upon Beckmann rearrangement reaction from cyclohexyl methyl ketone CH₃-CO-C₆H₁₁ ? How ?

(12 × 1 = 12 weightage)

Turn over

Section C

Answer any two questions.

Each question carries weightage 4.

25. Describe with examples the mechanism, selectivity and use of the following oxidations :
(i) Dess-Martin oxidation ; (ii) Jacobsen epoxidation ; (iii) Riley oxidation ; and (iv) Swern oxidation.
26. Discuss the use of alkali metals in organic reductions in various reaction media including liquid ammonia.
27. What are the general methods to synthesise pyrazole, oxazole and thiazole derivatives ?
28. Explain the mechanism of : (i) Heck ; (ii) Sonogashira ; (iii) Negishi and (iv) Stille couplings.

(2 × 4 = 8 weightage)