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[Total No. of Pages : 2

PGIIS-020-A-22

M.Sc III Semester (CBCS) Degree Examination

ORGANIC CHEMISTRY

Natural Products

Paper : SCT-3.1

Time : 3 Hours

Maximum Marks : 80

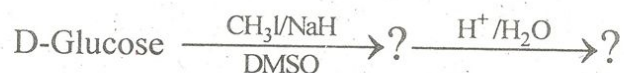
Instructions to Candidates:

- i) Answer all questions
- ii) All questions carry equal marks.

Answer any EIGHT of the followings:

(8×2=16)

1. a) Predict the product for the following reaction.



- b) What is glycosidic bond? Predict the products for the reaction of β -D-Glucose with ethanol in presence of H^+ .
- c) Give one example each for C- and N-termini protecting groups used in peptide synthesis.
- d) Sketch the structure of cholesterol and give its nomenclature.
- e) Highlight the stereochemistry of ring junction in ergosterol.
- f) State special isoprene rule. Give example.
- g) Give an one chemical method to detect the presence of tertiary nitrogen in alkaloid.
- h) Draw the structure of yohimbine.
- i) What are lipids? Mention any one simple lipid and write its structure.
- j) Give a chemical test for the confirmation of methoxy group in alkaloids.

2. a) What are oligosaccharides? Discuss the structure and ring size determination of sucrose.
- b) Explain any one modern method of synthesis for tripeptide using suitable example.
- c) How glycogen differs from cellulose structurally? Write their structures. Mention the applications.

(OR)

- c) How primary structure of protein is determined using chemical method? Mention any one common method used with reaction. (5+5+6=16)

3. a) Establish the size of the rings A,B,C& D in steroids.
- b) Discuss the structure elucidation of corticosteroids.
- c) What is Marker degradation? How this method is useful in obtaining progesterone.

(OR)

- c) Outline the synthesis of estrone. (5+5+6=16)

4. a) How the presence of lactam, methoxy and ester functional groups can be confirmed in alkaloids? Explain with suitable reaction and justification.
- b) Sketch the total synthesis of ergotamine.
- c) Outline the structure elucidation of camphor.

(OR)

- c) Describe the structure elucidation of abietic acid. (5+5+6=16)

5. a) Discuss the dark phase for the biosynthesis of glucose-6-phosphate.
- b) Formulate the biosynthesis of diterpenoids.
- c) Write down the steps involved in the biosynthesis of testosterone and estradiol from cholesterol.

(OR)

- c) Illustrate the biosynthesis of quinoline and isoquinoline alkaloids. (5+5+6=16)

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PGIIS-019-A-22

M.Sc. III Semester (CBCS) Degree Examination

ORGANIC CHEMISTRY

Reaction Mechanisms

Paper : HCT 3.2

Time : 3 Hours

Maximum Marks : 80

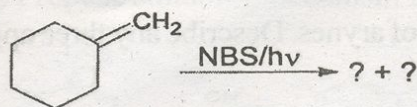
Instructions to Candidates:

1. Answer All questions.
2. All questions carry equal marks.

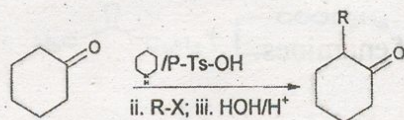
Answer any EIGHT of the following:

(8×2=16)

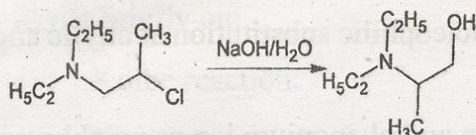
1. a) Why allyl and benzoyl radicals are more stable than the alkyl radical?
b) Predict the product and propose the mechanism for the following transformation:



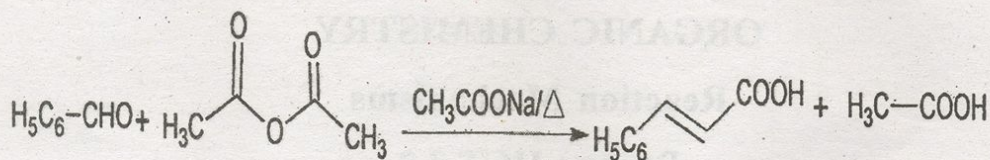
- c) Propose the suitable mechanism for the following transformation:



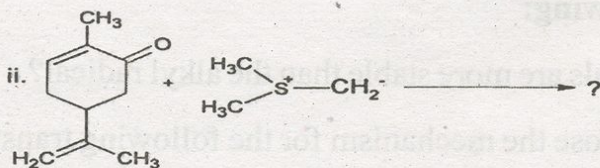
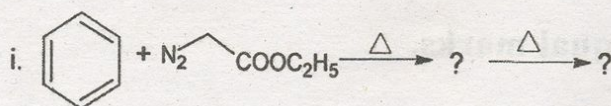
- d) Why trans-2 chlorocyclohexanol undergoes epoxide formation faster than its cis isomer?
e) Propose suitable mechanism for the following reaction:



- f) What is Barton reaction? Sketch its mechanism by taking appropriate example.
- g) Write both the conformers of chlorocyclohexane. Which conformer will undergo E2 elimination? Give reason.
- h) Propose suitable mechanism for the following reaction:



- i) What is eclipsing effect in elimination reactions?
- j) Sketch one reaction involving sulphur ylide as an intermediate.
2. a) Predict the product (s) with suitable mechanism for the followings:



- b) Illustrate any two methods for the formation of arynes. Describe any three applications in organic synthesis.
- c) Write note on:
- i) Geometry, stability and reactions of free-radicals.
- ii) Formation and synthetic applications of enamines.

(OR)

- c) Write briefly on:
- i) Reactions and applications of phosphorus ylides.
- ii) Stroke-enamine reaction. (5+5+6=16)

3. a) Illustrate with suitable examples the nucleophilic substitution at allylic and trigonal carbon atom.
- b) Explain the reactions involving halogen and phenonium ion as neighbouring group participation.

c) Give an account on NGP in addition and elimination reactions.

(OR)

c) Write briefly on intramolecular displacement by oxygen in neighbouring group participation reactions. (5+5+6=16)

4. a) Illustrate with suitable examples addition of sulphur and oxygen nucleophiles across carbonyl compounds.

b) Sketch the Mechanism of E1 and E2 mechanisms. Comment on their stereochemistry.

c) What is Cram's rule? Illustrate with appropriate example how the open-chain model is useful to determine the stereochemistry of the product formed in the addition reactions of carbonyl compounds.

(OR)

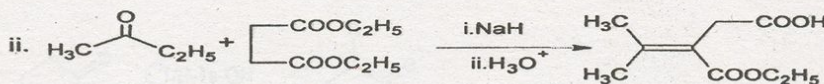
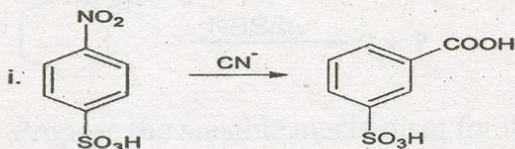
c) Write briefly on:

i) Chugaev reaction and its applications.

ii) Elimination by carbanions mechanism. (5+5+6=16)

5. a) Explain the mechanism of Sandmeyer reaction. Mention its applications in organic synthesis.

b) Propose suitable mechanism for the following transformations:



c) Give an account of unimolecular and bimolecular allylic rearrangements.

(OR)

c) Write briefly on:

i) Kolbe reaction.

ii) Fries rearrangement. (5+5+6=16)