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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2021 ONLY)

21 PCY 205

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : JULY 2022

M.Sc.-CHEMISTRY **MAXIMUM MARKS: 70**

II SEMESTER **TIME : 3 HOURS**

ORGANIC CHEMISTRY –II – ORGANIC REACTIONS AND STEREO CHEMISTRY

SECTION - A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLE CHOICE QUESTIONS. (K1)

1. Which one of the following reagent is used in oxidation, acetoxylation and methylation reactions?
   a) OsO_4 b) SeO_2
   c) Lead tetra acetate d) Aluminium isopropoxide
2. Barton reaction involves photolysis of_____.
   a) α, β –unsaturated ketones b) Diazomethane
   c) Cyclic ketones d) Long chain alkyl nitrites having δ –hydrogen
3. Pericyclic reactions are guided by the principle of _____.
   a) Conservation of orbital symmetry b) Conservation of Energy
   c) Common ion effect d) Solubility product
4. How many isomers are possible for butane-2, 3-diol_____.
   a) 1 b) 2 c) 3 d) 4
5. Which one is a tropane alkaloid_____.
   a) Piperine b) Nicotine c) Atropine d) Quinine

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Which reducing agent is a selective reducing agent to reduce carbonyl group without effecting reduction of double bond, ester, NO_2 and CN group?
7. What is Paterno-Buchi Reaction?
8. What are the three main types of pericyclic reactions?
9. How many conformation isomers are possible for ethane?
10. Which alkaloid is used as a drug for malaria?

SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Show that the reaction conducted in presence of Baker's yeast is stereospecific in Nature.

(OR)

b) Illustrate with two examples and prove that Lithium Aluminium hydride is a universal reducing agent.

12. a) Explain the difference between a Photochemical and a thermal reaction with suitable examples.

(OR)

b) Differentiate Norrish type-I and Norrish type-II reactions with suitable examples.

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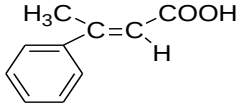
13. a) Show that Diels Alder reaction is a 4n +2π cycloaddition reaction.

(OR)

b) Describe a [1, 3-] sigmatropic rearrangement with a suitable example.

14. a) Examine the compound whether it is E or Z configuration and justify your answer.



(OR)

b) Compare and contrast i) Configurational isomers and Conformational isomers.
ii) Enantiomers and diastereomers

15. a) Describe Hofmann and Emde degradations.

(OR)

b) Find out a method to determine the position of methoxy group in quinine.

SECTION - C (4 X 10 = 40 MARKS)

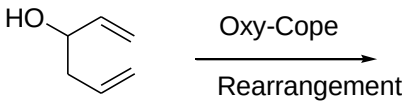
ANSWER ANY FOUR OUT OF SIX QUESTIONS
(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS (FROM Qn. No : 17 to 21) (K4 (Or) K5)

16. Optical activity of a molecule is linked with the presence of asymmetric carbon atom. Justify this with the example to Spiranes.

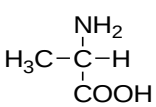
17. Discuss the following
    a) Angular methylation by Wilkinson's catalyst.
    b) SeO_2 as a catalyst in cyclodehydrogenation.
    c) Use of crown ether in oxidation reactions
    d) Differentiate Clemenson and Wolfkishner reduction

18. Describe the following in detail
    a) Quantum efficiency
    b) Singlet and triplet states
    c) Modes of dissipation of energy and transitions by Jablonski diagram

19. a) Justify that Claisen rearrangement is a [3,3]-sigmatropic rearrangement.
    b) determine the product of the following reaction oxy-cope rearrangement.



20. Determine the configuration symbols to the following compounds and comment on it.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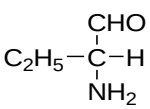
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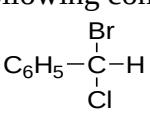
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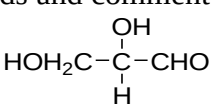
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21. Discuss the structure elucidation process for alkaloids in general and explain the structural elucidation of nicotine.

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