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CHE-553

NATURAL PRODUCTS, HETEROCYCLIC AND SPECTROSCOPY

M.Sc. Chemistry (MSCCH-12/13/16/17)

Second Year, Examination-2020

Time Allowed : 2 Hours Maximum Marks : 80

Note: This paper is of Eighty (80) marks divided into Two (02) sections A and B. Attempt the question contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Questions)

Note: Section-'A' contains Five (05) long Answer type questions of twenty (20) marks each. Learners are required to answer any two (02) questions only. (2×20=40)

1. What is Porphyrin ring? Discuss its synthesis and applications.

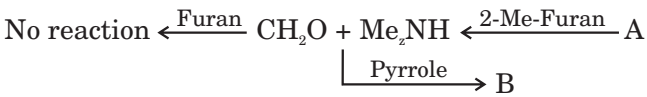
2. What is NMR? Discuss in detail :

   (a) F^{19} – NMR

   (b) P^{31} – NMR

3. (a) Pyrrole is much more acidic than s-allylamine. Suggest a reason.

   (b) Complete following reaction and suggest the mechanism.



4. Discuss the biosynthesis of Mono Sesqui and Diterpenoids with their structures and applications.

5. Write short notes on the following :

   (a) Octane rule

   (b) Double resonance

   (c) Aromaticity in pyridine

   (d) Vitamins

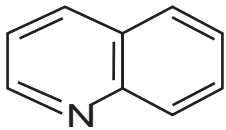
   (e) INEDQUATE – C^{13} – NMR experiment.

Section-B

(Short answer type questions)

Note: Section-B Contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only. (4×10=40)

1. Discuss the synthesis of following compound with mechanism and application :



2. Differentiate between ORD and CD How ORD is helpful to analyse the Compound?

3. What are Biocatalyst? Discuss the mode of action of enzymes.

4. What are prostaglandins? What are their biological significance? Discuss with examples.

5. Arrange writing the structures of following compounds in order of their basicity. Explain the reason for your answer.

   Pyridine, 4,-amino–, 4–methyl-, Pyridine and 4–cyno pyridine.

6. How proteins are Metabolised? Discuss in detail.

7. Discuss physiological behaviour and classification of alkaloids. How they are synthesized in plants/animals?

8. Discuss in brief :

   (a) Vitamin – D

   (b) Purine

   (c) 2D – COSY – NMR

   (d) Rotenoids

   (e) Fatty acids

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