

P-934

Total Pages : 4

Roll No.

CHE-553

Natural Product, Heterocyclic and Spectroscopy

M.Sc. Chemistry (MSCCH)

2nd Year Examination, 2023 (June)

Time : 2 Hours]

[Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answer to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. Discuss the synthesis of reserpine. And give application of reserpine.

2. Write short notes on the following terms used in NMR :
 - (a) HSQC.
 - (b) Off resonance.
 - (c) C13-NMR and its explanation.
 - (d) Scalar coupling.

3. Describe any three in brief of the following :
 - (a) Synthesis of pyrimidine.
 - (b) Vitamin A₁ and A₂.
 - (c) Optical rotatory dispersion.
 - (d) Chemical shift scale in ¹⁹F NMR.

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

5. Describe briefly the following
 - (a) mechanism of enzyme catalysis.
 - (b) factors affecting the enzyme catalysis.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. Give the outline the biosynthesis of Shikmic acid.
2. What are Prostaglandins? What is their biological significance? Discuss with examples.
3. (a) What are Co-factors and Co-enzymes? Describe in brief.
(b) Explain the key and lock model and induced fit model for the mechanism of enzymes.
4. Explain why ^{19}F and ^{31}P nuclei are considered to highly NMR sensitive after ^1H while ^{12}C is most insensitive?
5. Write short notes on the following :
 - (a) Metabolism of proteins.
 - (b) ORD.
6. Discuss medicinal importance and chemistry of benzofurans and quinoline.

7. What are alkaloids ? Discuss their classifications and uses.
8. (a) Pyrrole is much more acidic than *s*-allylamine. Suggest a reason.
- (b) INEDQUATE – C13 – NMR experiment.
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