

## III Semester Examination, January 2022

## M.Sc.

## CHEMISTRY

## Paper II

## (Natural Product)

Time : 3 Hours ]

[ Max. Marks : 80

**Note :** *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

## SECTION A

1×8=8

## (Objective Type/Multiple Choice Questions)

*Choose the correct answer :*

- The molecular formula of morphine is :  
 (a)  $C_{17}H_{19}NO_3$       (b)  $C_{17}H_{18}NO_3$   
 (c)  $C_{17}H_{19}NH_3$       (d)  $C_{17}H_{18}NH_3$
- What can be the correct IUPAC nomenclature of Atropine ?  
 (a) (Rs)-1-(1-methylethylamino)-3-(1-naphthyloxy)

P.T.O.

- [8-methyl-8-(1-methylethyl)-8-azoniabicyclo [3.2.1] oct-3-yl] 3-hydroxy-2 phenyl propanoate
- (Rs)-(8-Methyl-8-azabicyclo [3.2.1] oct-3-yl) 3-hydroxy-2-phenylpropanoate
- 2-[Aminocarbonyl] N, N, N-trimethylethaminium chloride

3. Abietic acid is a :

- Acyclic diterpenoid
- Tricyclic diterpenoid
- Acyclic sesquiterpenoid
- Bicyclic sesquiterpenoid

4. Farnesol contains :

- Two rings      (b) Three rings
- Four rings      (d) No rings

5. Which of the following regulates the female reproductive cycle ?

- Progesterone      (b) Testosterone
- Estrogens      (d) Glucocorticoids

6. Steroids have :

- Sterol nucleus with two alkyl chain attached to the ring D of cholesterol

- (b) Sterol nucleus with two  $\text{CH}_3$  between C ring and D ring of cholesterol
- (c) Sterol nucleus without  $\text{CH}_3$  between C ring and D ring of cholesterol
- (d) Sterol nucleus but lack the alkyl chain attached to the ring D of cholesterol.
7. The non-covalently bound to globin chain of Haemoglobin and transports  $\text{CO}_2$  in the blood is :
- (a) Oxyhaemoglobin
- (b) Deoxyhaemoglobin
- (c) Carbaminohaemoglobin
- (d) Methemoglobin
8. Flavanones contain :
- (a) Only hydroxyl and methoxy groups
- (b) Only hydroxyl and carboxyl groups
- (c) Only hydroxyl and nitro groups
- (d) Only hydroxyl and carboxyl groups

**SECTION B****3×8=24****(Short Answer Type Questions)****Note :** Answer the following questions in **250** words.**G-3/360/22****P.T.O.****Unit-I**

- How will you confirm the following structural features are present in guanine :
  - Secondary alcoholic group
  - Methoxy linkage
- Discuss the physiological action of morphine.
- Explain Von Braun degradation of alkaloids in short.

**Unit-II**

- Explain isoprene rule.
- How will you prove the presence of aldehydic group in citral ?
- How abietic acid may be converted to homoretene.

**Unit-III**

- How will you test for cholesterol by libermann-Burehard reaction ?
- Discuss the position of angular methyl group in bile acid.
- How will you convert cholesterol into Andosterone.

**G-3/360/22**

## Unit-IV

10. Write in short synthesis of Haemin.
11. Write a note on biosynthesis of flavonoids.
12. Give the synthesis of Myrcetin.

## SECTION C

12×4=48

(Long Answer Type Questions)

**Note :** Answer the following questions in 500 words.

## Unit-I

1. What are Alkaloids ? Discuss the structure of coniine.

Or

What are Alkaloids ? Discuss the structure of Ephedrine.

## Unit-II

2. How has the constitution of  $\alpha$ -Terpineol been established by degradation and rational synthesis ?

Or

How will you establish the structure or constitution of geraniol or santonin ?

## Unit-III

3. What are Steroids ? Give the stereochemistry and synthesis of cholesterol.

Or

How will you determine the structure of progesterone ?

## Unit-IV

4. What are plant pigments ? Describe general methods used for their isolation and structure determination.

Or

Discuss the structure of Hirustidine chloride giving its synthesis also.

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