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**Unit-II**

2. Explain Isoprene rule with suitable examples. How can you prove the P-menthane skeleton in menthol.

Or

Explain the structure of Farnesol.

**Unit-III**

3. What are steroids ? Discuss the position of the following in cholestrol :

- (i) Angular methyl group,
- (ii) Position of side chain,
- (iii) Position of double bonds.

Or

Determine the structure of Anderosterone, giving its synthesis.

**Unit-IV**

4. What are plant pigments ? Give the classification of flavones and flavonols.

Or

Explain in brief relationship between Haemoglobin and Chlorophyll.

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**G-3/314/21**

**Roll No.....**

**M.Sc. III Semester Examination, April-2021**

**CHEMISTRY**

**Paper II**

**(Natural Product)**

Time : 3 Hours ]

[Maximum 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'**

**(Objective Type Questions)**

Choose the correct answer :

**1 × 8 = 8**

1. Alkaloids are :

- (a) Sugar bases                      (b) Phosphorous bases
- (c) Nitrogenous bases    (d) All of the above

2. Morphine contains main nucleus :

- (a) Phenanthrene              (b) Anthracene
- (c) Naphthalene              (d) Naphthacene

3. What structure is that of isoprene :

- (a)  $\text{CH}_3-\text{CH}(\text{CH}_3)\text{CH}=\text{CH}_2$
- (b)  $\text{CH}_2=\text{CHCH}_2-\text{CH}=\text{CH}_2$
- (c)  $\text{CH}_3\text{CH}=\text{CH}-\text{CH}=\text{CH}_2$
- (d)  $\text{CH}_2=\text{C}(\text{CH}_3)-\text{CH}=\text{CH}_2$

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4.  $\beta$ -carotene on rapid oxidation with  $K_2Cr_2O_7$  gives :  
 (a) Semi  $\beta$ -carotenone (b) Dihydroxy- $\beta$ -carotene  
 (c)  $\beta$ -carotenone (d) None of these
5. What is the parent compound from which steroids are derived :  
 (a) Glycerol (b) Cholesterol  
 (c) Triglyceride (d) Bile salt
6. Cholic acid and taurine combined with each other form the product :  
 (a) Taurocholic acid (b)  $\beta$ -cholanolic acid  
 (c) Allocholic acid (d) None of these
7. The basic nucleus in flavonoids is :  
 (a) Chromone (b) Benzo-gamma-pyrone  
 (c) Both (a) and (b) (d) None of these
8. Which of the following biological activities of flavonoids do not exhibit for the human body :  
 (a) Anti oxidant (b) Antipyretic  
 (c) Anti inflammatory (d) Anti allergic

**SECTION 'B'**  
**(Short Answer Type Questions)**

**3 × 8 = 24**

**Note :** Attempt total 8 questions. Two questions from each unit are compulsory. Each question carries 3 marks.

**Unit-I**

1. Explain Hofmann exhaustive methylation in short.
2. Explain the physiological action of Alkaloids.

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3. Prove the statement that the nicotine is 3 substituted pyridine.

**Unit-II**

4. Define Terpenoids. Give one example with structure from each class of the following :  
 (a) Acyclic (b) Monocyclic  
 (c) Bicyclic
5. Give one synthesis of Zingiberene.
6. Prove  $\beta$  carotene has symmetrical structure.

**Unit-III**

7. Discuss the position of hydroxyl groups in Bile acids.
8. Convert cholesterol into Testosterone.
9. Explain bio-synthesis of bile acid.

**Unit-IV**

10. State how quercetin is related to cyanidin.
11. Write down about Ziesel's method with equation.
12. Give one synthesis of Hirsutidin.

**SECTION 'C'**  
**(Long Answer Type Questions)**

**12 × 4 = 48**

**Note :** Answer the following questions. (One from each unit is compulsory).

**Unit-I**

1. Discuss the structure and synthesis of Morphine.

Or

Discuss the degradative and synthetic evidences leading to the structure of Atropine.

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P.T.O.