

[A-33]

No. of Printed Pages: 3

SARDAR PATEL UNIVERSITY
M.Sc. Semester – IV (Organic Chemistry) Examination
Thursday, 23rd April 2015

PS04CORC02: Natural Products

Time: 10:30 am to 01:30 pm

Total Marks: 70

Note: Right hand figures indicate marks.

Q.1 Select the correct answer in the following.

08

1. Deficiency of Vitamin B₁ (thiamine) causes the disease

- a. Scurvy
- b. Xerophthalmia
- c. Beriberi
- d. Dermatitis

2. Ozonolysis of Vitamin A₁ produces

- a. Geronic acid
- b. Pyromellitic acid
- c. Acetic acid
- d. Lactic acid

3. The basic heterocyclic nucleus present in Mahanimbine is

- a. Quinoline
- b. Carbazole
- c. Phenanthrene
- d. Pyrimidine

4. The methylmorphol is

- a. 3-Hydroxy-4-methoxy phenanthrene
- b. 3,4-Dimethoxy phenanthrene
- c. 1-hydroxy-2-methoxy phenanthrene
- d. 3-Methoxy-4-hydroxy phenanthrene

5. Number of isoprene units present in triterpenoid is

- a. 5
- b. 3
- c. 6
- d. 5

6. One of the products obtained upon distillation of β -carotene is

- a. 1,4-dimethylnaphthalene
- b. 2,6-dimethylnaphthalene
- c. 1,8-dimethylnaphthalene
- d. 1,5-dimethylnaphthalene

7. Cholesterol $\xrightarrow{\quad ? \quad}$ Cholestanetriol

The reagent used for the above transformation is

- a. H₂O₂, CH₃COOH
- b. CrO₃, CH₃COOH
- c. Zn-CH₃COOH
- d. LiAlH₄

8. Which of the following is female sex hormone?

- a. Cortisone
- b. Testosterone

- c. Oestrone
- d. Ergocalciferol

Q. 2 Answer the following (Any Seven).

14

1. Give the synthesis of Vitamin-C using D-glucose as a starting material.
2. Write in brief the biological importance of vitamin A₁ and biotin (vitamin H).
3. Give the evidences to prove that the nitrogen end of the nitrogen containing bridge -CH₂-CH₂-N(CH₃)- is attached at C₉ or C₁₀ of the phenanthrene ring in morphine.
4. Give the biogenesis of monoterpenoids using mevalonic acid pathway.
5. Discuss the stereochemistry of β-eudesmol.
6. Give the mechanism for longifolene to isolongifolene transformation under acidic condition.
7. Write short note on bile acids.
8. Give the evidences to show that the secondary hydroxyl group in Cholesterol is present in ring A of the Cholesterol.
9. With suitable examples explain Hofmann's exhaustive methylation method.

Q. 3 A. Answer the following.

06

(i) The sodium sulfite cleavage of vitamin B₁ results in a compound C₆H₉NOS with basic properties and a compound C₆H₉N₃O₃S with acidic properties. Discuss the structure of compound with acidic properties.

(ii) Give the synthesis of Vitamin A₁.

B. Discuss the structure of Biotin (Vitamin H).

06

OR

B. Discuss the structure of Pyridoxine (Vitamin B₆) and give its synthesis.

06

Q. 4 A. Answer the following.

06

(i) Give the synthesis of Sceletium alkaloid A₄.

(ii) Give the mechanism for the acid catalyzed transformation of thebaine into thebenine.

B. Discuss the structure of mahanimbine and give its synthesis.

06

OR

B. Give the synthesis of Reserpine.

06

Q. 5 A. Discuss Campbell and Soffer's work for establishing position of double bonds in Cadinene. 06

B. Prove symmetric structure of β -Carotene and write its synthesis. 06

OR

B. β -Eudesmol upon sulphur dehydrogenation gives Eudalene as a product. Discuss the structure of Eudalene. Give the synthesis of Eudalene also. 06

Q. 6 A. Discuss the nature and position of side chain in Cholesterol. 06

B. Give the synthesis of following sex hormones 06
(i) Testosterone
(ii) Oestrone

OR

B. Answer the following 06

(i) Give the synthesis of Cortisone .

(ii) Discuss the chemical evidences for the presence of angular methyl groups in Cholesterol.
