[199/A48] SEAT No._____ No. of Printed Pages : 2

SARDAR PATEL UNIVERSITY

M.Sc. Semester-IV (Organic Chemistry) Examination

Wednesday, 24th October 2018

Natural products: PS04CORC02

Time: 02:00 pm to 05:00 pm **Marks: [70]**

Note: Right hand figures indicate marks

Q-1 **Select the correct answer from the option given below.** **[08]**

1. No of double bond equivalence for Vitamin B_6 is _____.
   (a) 1 (b) 2 (c) 3 (d) 4
2. Pyridoxine can be converted into pyridoxal by the reagent
   (a) $LiAH_4$ (b) $KMnO_4$ (c) Ac_2O (d) $NaBH_4$
3. Number of isoprene units in triterpenoids is _____.
   (a) 2 (b) 3 (c) 6 (d) 8
4. Methoxyl group in alkaloids is determined by _____.
   (a) Von braun method (b) Herzing mayer method
   (c) Zeisel's method (d) Emde modification
5. Position of two angular methyl groups in Cholesterol are at _____.
   (a) 10 & 13 (b) 10 & 17 (c) 13 & 17 (d) 9 & 13
6. Which of the following is female sex hormone?
   (a) Cortisone (b) Oestrogen (c) Testesterone (d) none of these
7. Morphine when heated with conc. HCl under pressure gives _____.
   (a) apomorphine (b) morphol (c) codeinone (d) codeine
8. Molecular formula of perhydro-β-carotene is _____
   (a) $C_{40}H_{48}$ (c) $C_{40}H_{78}$
   (b) $C_{42}H_{58}$ (d) $C_{40}H_{70}$

Q-2 **Answer the following (Any Seven).** **[14]**

1. Write the synthesis of Vitamin C.
2. Explain isoprene rule with suitable example.
3. Explain Barbier-Wieland degradation with suitable example.
4. Write a note on Bile acid.
5. Explain Hoffmann exhaustive methylation with suitable example.
6. Write the synthesis of Vitamin B_6.
7. Write NMR data for structure elucidation of Mahanimbine.
8. Write the product formed from rearrangement of Caryophyllene in acidic condition.
9. Give synthesis of β-Eudesmol.

Q-3 [A] Discuss the structure of Vitamin B_6. **[06]**

[06]

[B] The sodium sulphite cleavage of Vitamin B_1 results in to compound A having molecular formula C_6H_9NOS and compound B having molecular formula $C_6H_9N_3O_3S$. Discuss the structure of compound with basic property along with its synthesis.

OR

[B] Discuss the structure of Vitamin H. [06]

Q-4 [A] Write the synthesis of following. [06]

1. Tylophorine 2. Sceletium alkaloid A_4

[B] Give evidences to show that there is cyclic 3°-nitrogen in Morphine and it has attachment of methyl group. [06]

OR

[B] Answer the followings. [06]

1. Give evidences to prove that the nitrogen end of the nitrogen containing bridge [-N(Me)–CH_2-CH_2-] is attached to C_9 or C_{10} of the phenanthrene ring in Morphine.
2. Discuss the position of cyclic ether linkage present in Morphine.

Q-5 [A] Discuss Campbell and Soffer's work for establishing position of double bond in Cadinene. [06]

[B] Answer the followings. [06]

1. How will you confirm the symmetrical structure of β-Carotene.
2. Give the synthesis of Caryophyllene.

OR

[B] Discuss the biogenesis of monoterpenoids and sesquiterpenoids using mevalonic acid pathway. [06]

Q-6 [A] Discuss the position of hydroxyl group and double bond in Cholesterol. [06]

[B] Give the synthesis of Testosterone and Cortisone. [06]

OR

[B] Discuss the presence of angular methyl groups present in Cholesterol. [06]

—X—