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**SARDAR PATEL UNIVERSITY**

**M.Sc. SEMESTER – IV (Organic Chemistry) Examination**

**Saturday, 16th November 2019**

**Time: 02:00 pm - 05:00 pm**

**PS04CORC21: Natural Products**

**Total Marks – 70**

**N.B. Figures to the right indicate full marks**

**Q.1 Answer the following multiple choice questions.** **[08]**

1 Deficiency of _____ causes Beriberi disease.
(a) Vitamin $A_1$ (b) Vitamin $B_1$
(c) Vitamin $B_6$ (d) Vitamin H

2 UV spectra of pyridoxine are similar to _____.
(a) 3- OH- pyridine (b) 4- OH- pyridine
(c) 3- OH- pyrimidine (d) 4- OH- pyrimidine

3 Fusion of cinchonine with KOH gives _____.
(a) Lepidine (b) Cinchoninone
(c) Cinchonic acid (d) None of these

4 Morphine on reaction with ferric chloride gives characteristic color and forms soluble sodium salt with aq. NaOH, It may be due to _____.
(a) Primary -OH group (b)Secondary -OH group
(c) Tertiary -OH group (d) Phenolic -OH group

5 β- Eudesmol is example of _____.
(a) Monoterpenoid (b) Diterpenoid
(c) Sesquiterpenoid (d) Triterpenoid

6 _____ Isoprene units present in tetraterpenoids.
(a) 8 (b) 4
(c) 6 (d) 2

7 Cholestanone can be converted into cholestane using _____ reagent.
(a) $LiAlH_4$ (b) Zn – Hg/HCl
(c) $NaBH_4$ (d) $H_2$/Ni

8 Oestrone is _____.
(a) Male sex hormone (b) Female sex hormone
(c) Adernal cortical hormone (d) None of these



(PTO)

**Q.2 Answer the following questions. (Any seven)** **[14]**

1 In pyridoxine two –OH groups are alcoholic & one –OH group is phenolic. Explain it.
2 Write the synthesis of Vitamin -C from D- glucose.
3 Secondary –OH group is present on second half of cinchonine. Explain it.
4 Write the synthesis of tylophorine.
5 Explain the transformation of caryophyllene to neoclovene under acidic condition.
6 Give the evidence for trans fusion of decaline nucleus in β- Eudesmol.
7 Write the synthesis of testosterone from cholesterol.
8 Explain the Barbier-Wieland degradation with suitable example.
9 Give the conversion of (+)- longifolene to (-)- longifolene.

**Q.3**

**[A]** Discuss the structure of Biotin (Vitamin H). **[06]**

**[B]** Discuss the structure of Vitamin $A_1$ and gives its synthesis. **[06]**

**OR**

**[B] Answer the following questions.**

**I** Write the synthesis of Vitamin $B_2$. **[03]**

**II** The sodium sulphite cleavage of Vitamin $B_1$ results in a compound $C_6H_9NOS$ with basic properties and a compound $C_6H_9N_3O_3S$ with acidic properties. Discuss the structure of compound with acidic properties. **[03]**

**Q.4**

**[A]** Write the synthesis of i) 2 – ethyl pyridine from tropine. **[06]**
ii) pimelic acid from tropinic acid.

**[B]** Write the synthesis of Reserpine. **[06]**

**OR**

**[B]** Give the chemical evidences for the following facts in morphine. **[06]**

i) The nitrogen end of the nitrogen containing bridge is attached at $C_9$ or $C_{10}$ position of phenanthrene nucleus.
ii) The presence of ether linkage between $C_4$ & $C_5$ carbons of phenanthrene nucleus.

**Q.5**

**[A]** Discuss the campbell and soffer's work for establishing position of double bond in cadinene. **[06]**

**[B]** Prove the symmetric structure of β-carotene and write it's synthesis. **[06]**

**OR**

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

**Q.6**

**[A]** Discuss the nature and position of side chain in cholesterol. **[06]**

**[B]** Discuss the position of –OH group and double bond in cholesterol. **[06]**

**OR**

**[B] Answer the following questions.**

**I** Write the synthesis of progesterone from cholesterol. **[03]**

**II** Write short note on bile acids. **[03]**

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