

**M. SC. (ORGANIC CHEMISTRY) SEM-IV (CHOICE BASED  
CREDIT & GRADE SYSTEM) : WINTER - 2017  
SUBJECT : CHEMISTRY OF NATURAL PRODUCTS**

Day : Friday  
Date : 03/11/2017

**W-2017-0792**

Time : 03.00 PM TO 06.00 PM  
Max. Marks : 60

**N.B.:**

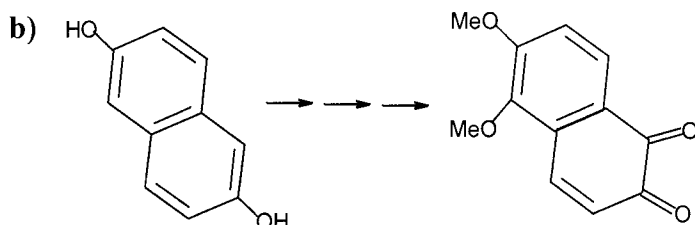
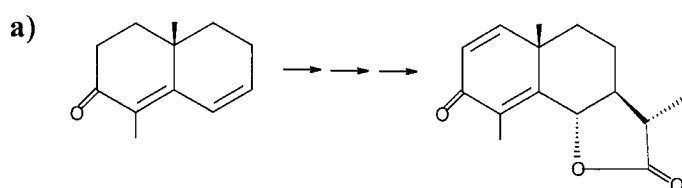
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.

**SECTION – I**

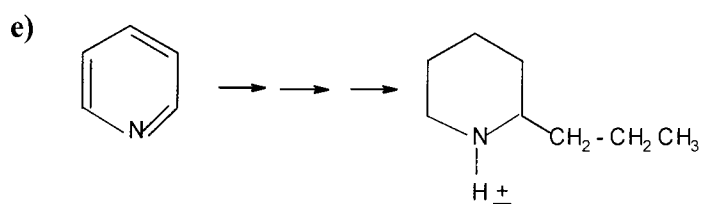
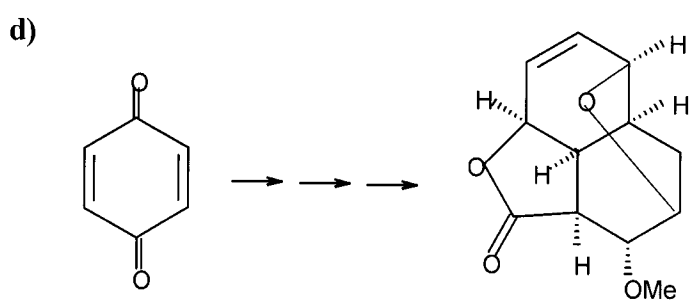
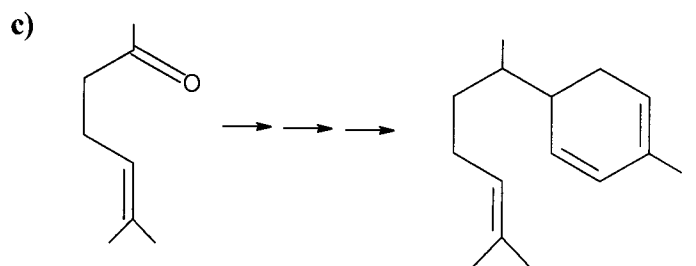
**Q.1** Answer **ANY THREE** of the following: **[15]**

- a) Give the nature of nitrogen and oxygen atoms in reserpine.
- b) Give evidences to establish the presence of the following in caryophyllene.
  - i) Presence of two double bonds.
  - ii) Bicyclic nature.
  - iii) Presence of cyclobutane ring.
- c) How the structure of coniine is established?
- d) How will you prove the presence of the following in abietic acid?
  - i) Presence of two conjugated double bonds.
  - ii) Tricyclic nature.
  - iii) Presence and position of carboxylic group.
- e) Write down the product/s in the following reaction:
  - i)  $\text{PhCH(OH)CH(CH}_3\text{)NO}_2 \xrightarrow{\text{H}_2/\text{Pt}} ?$
  - ii)  $\text{C}_6\text{H}_5\text{CH(OH)CH(CH}_3\text{)N}^+(\text{CH}_3)_3\text{OH}^- \xrightarrow{\Delta} ? + ?$

**Q.2** Complete **ANY THREE** of the following sequences. Indicate the reagents used **[15]** and discuss the mechanism, stereochemistry involved:



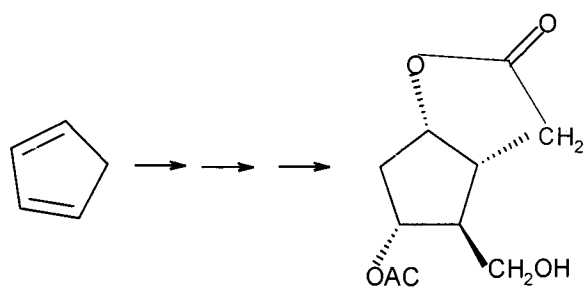
**P.T.O.**



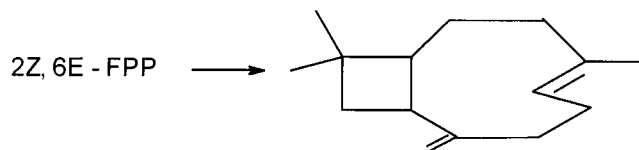
## SECTION - II

**Q.3** Answer **ANY THREE** of the following: [15]

- a) Outline the steps in the following synthetic sequence. Indicate the reagents involved and discuss the stereochemistry and mechanism involved.

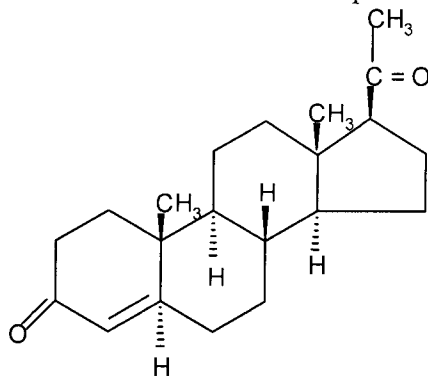


b) Suggest biogenetic scheme for the following:



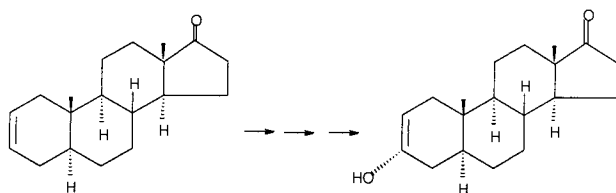
c) The structure of progesterone is as follows. Observe the structure of progesterone and answer the following questions:

- i) Write down its molecular formula.
- ii) Calculate its sites of unsaturation.
- iii) Write down total number of chiral carbon atoms.
- iv) Calculate  $\lambda_{\text{max}}$ .
- v) Give chemical evidence of the presence of C-17 functional group.



d) Give synthesis of Thiamine. Add comment on vital functions that involved Thiamine.

e) Give the steps involved in the following conversions:

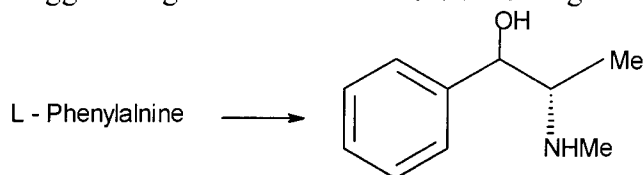


Q.4 Answer ANY THREE of the following:

[15]

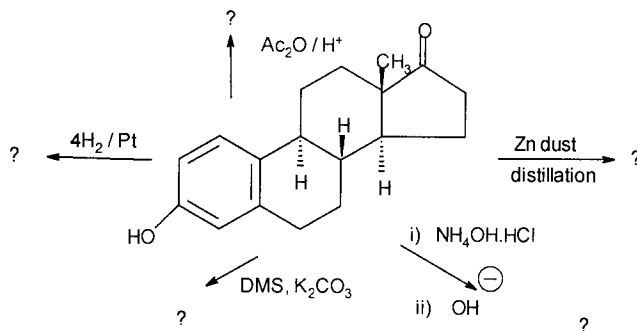
a) Write down the structures of different members of the prostaglandin depending upon the functionality in the five-membered ring system i.e., prostaglandins A to F.

b) Suggest biogenetic scheme for the following:

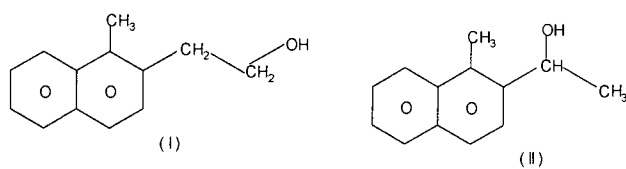


P.T.O.

c) Write down the structure of products in the following reactions of estrone.



d) How you will distinguish between the following structures (I) and (II) by chemical and physical methods?



e) Explain the formation of GPP, NPP and LPP from one molecule of DMAPP and one molecule of IPP.

\* \* \* \*