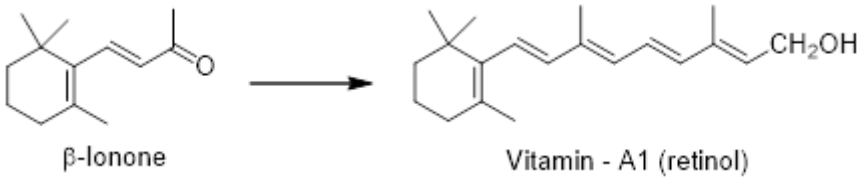
SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Sc.(Chemistry) - END SEMESTER EXAMINATIONS APRIL - 2023
SEMESTER - II
22PCHET2002 - Heterocyclics and Natural Products

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

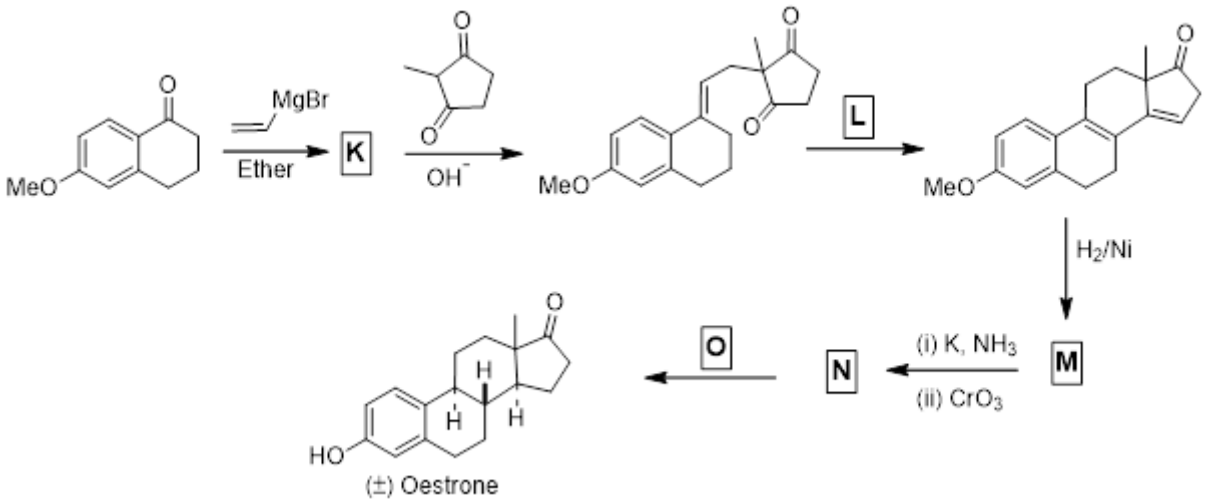
Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Provide a method for the synthesis of following heterocycles. [2 + 2+1]
   a) Thiazole b) Pyrazole c) Oxazole
2. Demonstrate the structural elucidation of pelargolidin and confirm its structure by describing their laboratory synthesis.
3. Effectuate the following conversion using Reformatsky reaction.



β-Ionone Vitamin - A1 (retinol)

4. Describe the general method for synthesis of crown ethers and their applications in metal ion sensing.
5. Identify the missing products in the following sequence in the synthesis of oestrone.



6. Describe any two general methods of synthesizing anthocyanidins.

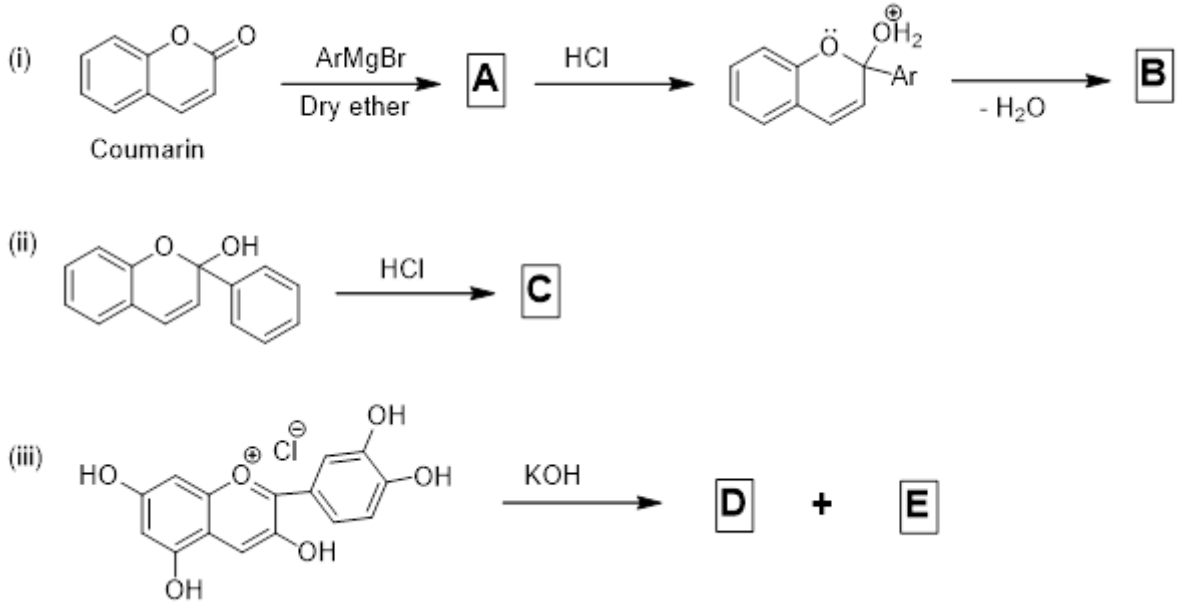
Contd...

7. Explain the methods used to determine the primary and secondary structure of proteins.
8. Compare and contrast the structural features and functions of DNA and RNA.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. a) Compare and discuss the basicity of pyridines, pyrimidine, pyridazine and pyrazine. [5]
   b) Outline the mechanistic details and scope of Fischer-Indole synthesis.[5]
10. a) How would you convert cholesterol to testosterone? [8]
    b) Draw the structure of (i) Progesterone and (ii) androgens cortisone [2]
11. a) Predict the products in the following transformations. [5 x 1]



   b) Explain the biosynthesis of flavonoids with examples. [5]
12. Write a note on [3 + 3 + 4]
    (i) Replication of DNA
    (ii) Biosynthesis of proteins
    (iii) Structure and application of β-cyclodextrin

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. a) Illustrate the synthesis of following tripeptide using solid phase peptide synthesis. [7]

    Gly-ala-Cystine

    b) Draw the chemical structure of [3 x 1]
    (i) Quinine (ii) Morphine (iii) Reserpine.

******

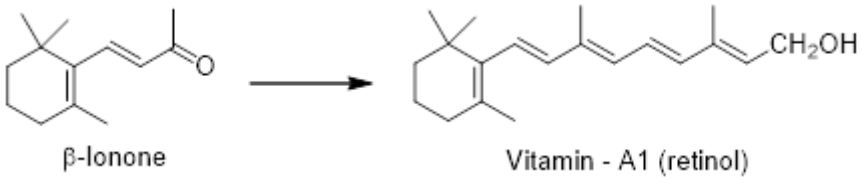
SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Sc.(Chemistry) - END SEMESTER EXAMINATIONS APRIL - 2023
SEMESTER - II
22PCHET2002 - Heterocyclics and Natural Products

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

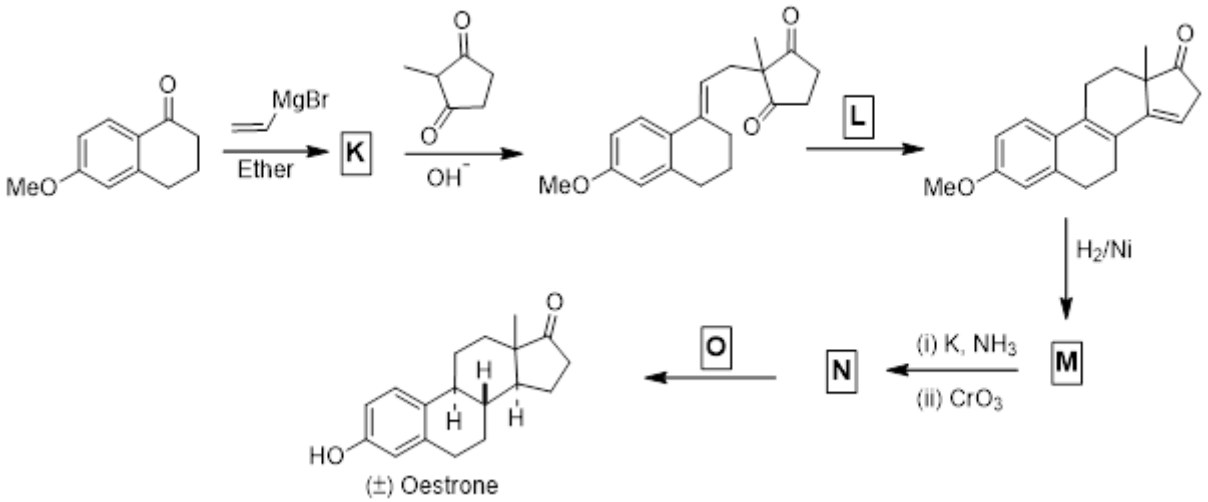
Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Provide a method for the synthesis of following heterocycles. [2 + 2+1]
   a) Thiazole b) Pyrazole c) Oxazole
2. Demonstrate the structural elucidation of pelargolidin and confirm its structure by describing their laboratory synthesis.
3. Effectuate the following conversion using Reformatsky reaction.



4. Describe the general method for synthesis of crown ethers and their applications in metal ion sensing.
5. Identify the missing products in the following sequence in the synthesis of oestrone.



6. Describe any two general methods of synthesizing anthocyanidins.

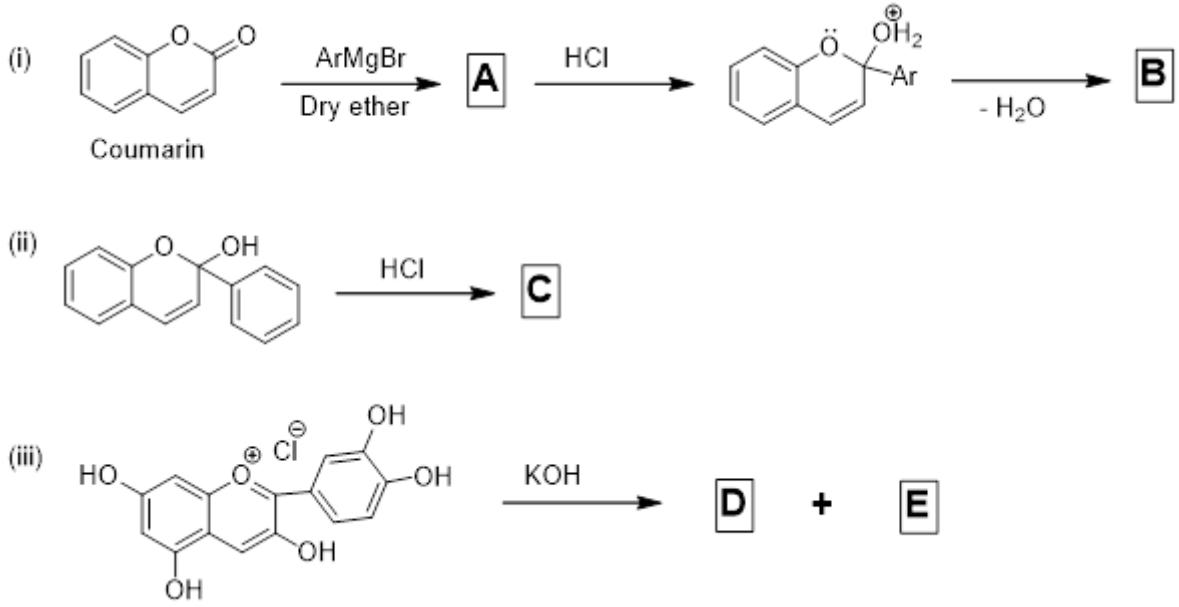
Contd...

7. Explain the methods used to determine the primary and secondary structure of proteins.
8. Compare and contrast the structural features and functions of DNA and RNA.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. a) Compare and discuss the basicity of pyridines, pyrimidine, pyridazine and pyrazine. [5]
   b) Outline the mechanistic details and scope of Fischer-Indole synthesis.[5]
10. a) How would you convert cholesterol to testosterone? [8]
    b) Draw the structure of (i) Progesterone and (ii) androgens cortisone [2]
11. a) Predict the products in the following transformations. [5 x 1]



   b) Explain the biosynthesis of flavonoids with examples. [5]
12. Write a note on [3 + 3 + 4]
    (i) Replication of DNA
    (ii) Biosynthesis of proteins
    (iii) Structure and application of β-cyclodextrin

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. a) Illustrate the synthesis of following tripeptide using solid phase peptide synthesis. [7]

    Gly-ala-Cystine

    b) Draw the chemical structure of [3 x 1]
    (i) Quinine (ii) Morphine (iii) Reserpine.

******