D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1

NATURAL PRODUCTS CHEMISTRY

UNIT – I

Alkaloids and Bio-organic chemistry

SECTION-A (6 Marks)

1. Explain in detail about the synthesis of cocaine and papverine.
2. Discuss in detail about the Watson and Crick model of DNA.
3. Describe in detail about the various types of RNA.
4. Give a brief account on nucleosides and nucleotides.
5. Outiline the synthesis of reserpine in detail.

SECTION-B (15 Marks)

6. Give a brief account on translation, transcription and replication.
7. Explain in detail about the various types of nucleic acids.
8. Discuss in detail about the structure and role of DNA and RNA.
9. How will you synthesise the morphine alkaloid?
10. Explain the various steps involved in the synthesis of quinine.
11. Ennumerate ijn detail about the biological functions of DNA and RNA.

UNIT – II

Proteins

SECTION-A (6 Marks)

1. Define aminoacids and its various types
2. What is peptide bond? How will you prepare simple peptides
3. Explain the Merrifield synthesis
4. Discuss about biosynthesis of proteins
5. Prepare a peptide bond using alanine, glycine and valine
6. Explain the tertiary structure of proteins

SECTION-B (15 Marks)

7. Discuss in detail about of primary, secondary and tertiary structure of proteins
8. Discuss in detail about Merrifield synthesis and biosynthesis of proteins
9. How will you prepare peptides using
   (i). cysteine, glutamic acid, arginine
   (II). amino acids glycine, alanine, lysine
10. Dicuss in detail about various properties of amino acids

UNIT-III

Heterocyclics

SECTION-A (6 Marks)

12. Explain the oxazoles synthesis.
13. Explain any two synthesis of isothiazole.
14. Discuss in detail about the synthesis of anthocyanins.
15. Explain the beckterd etal synthesis of oxazoles.
16. Explain any two synthesis of isoflavones.
17. Explain any two synthesis of adenine, cytosine
18. Explain any two syntheses of flavonols.
19. Discuss the major synthesis of purines.
20. Describe the two synthesis of barbutaraic acid
21. Describe the two syntheses of imidazole and benzeimdiazoles.
22. Describe the two synthesis of isooxazole.
23. Discuss the synthesis of flavones and flavonols.
24. Explain the synthesis thymine and uracil.
25. Explain the fred etal synthesis of oxazoles.
26. Explain the major synthesis of adenine and guanine.

SECTION-B (15 marks)

1. Explain the three syntheses of Imidazole, Oxazole, thiazole.

2. Discuss briefly about the synthesis of imidazole and benze imadiazoles.
3. Describe in detail about preparation and properties of flavones and Isoflavones.
4. Give a brief account on the synthesis of antocyanins.
5. Describe in detail about the purine and pyrimidines synthesis.
6. Discuss briefly about the synthesis of isothiazole, flavonols & iso oxazoles.

UNIT – IV

Vitamins and carotenoids

SECTION-A (6 marks)

1. Outline the synthesis of Vitamin A_1 using Reformatsky method.
2. How will you synthesize lycopene using Karrer et al synthesis?
3. What are carotenoids? Explain in detail about the extraction of carotenes from carrots.
4. Explain in detail about the synthesis of β-carotene using Inhoffen et al synthesis.
5. (a) Discuss in detail about the synthesis of Vitamin A_2.
   (b) Give a brief account on the synthesis of vitamin A_1 using Wittig reaction method

SECTION-B (15 marks)

6. Explain any two synthesis for α carotene and γ carotene
7. Describe in detail about the synthesis of β-carotene.
8. Outline the synthesis of vitamin A_1 using following methods
   (i) Jansen method
   (ii) Attenburrow method
   (iii) Isler method

UNIT – V

Steroids

SECTION-A (6 marks)

1. Outline the conversion of cholesterol to progesterone.
2. Explain the structural elucidation of stigmasterol.
3. Describle about ergosterol.
4. Explain the biosynthesis of any one bile acids.

SECTION-B (15 marks)

5. Explain the synthesis of cholesterol.
6. Describe in detail about the biosynthesis of cholesterol.
7. Outline the synthesis of bile acids.
8. How will you convert cholesterol to progesterone, oestrone and testosterone