

ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE, (AUTONOMOUS)
CUDDALORE-1.
ORGANIC CHEMISTRY – IV

SUBJECT CODE :PCH1013S
NAME OF THE STAFF HANDLING: A.AMALORPAVADOSS

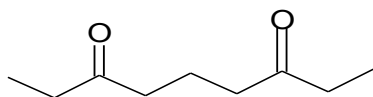
1. Suggest retrosynthetic and synthetic routes for the following Target Molecules. (4 + 2 + 4)

a)

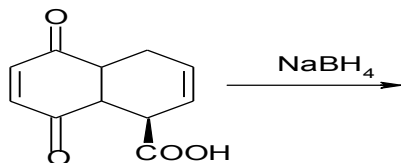


b) pentane – 2,4- dione

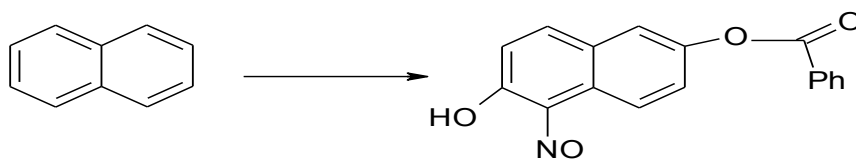
c)



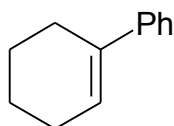
2. Predict the product of the following reaction. (4)



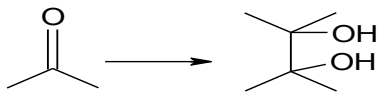
3. Suggest a method for doing the following conversion. (5)



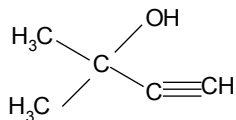
4. Write the retroreaction for the following target molecule. (4)



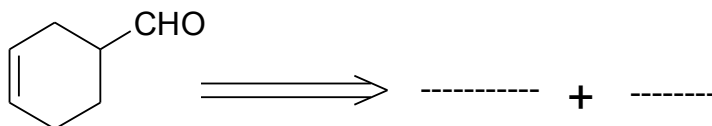
5. How will you do the following conversion? (5)



6. a) Write the retrosynthetic and synthetic route for the following molecule. (5)



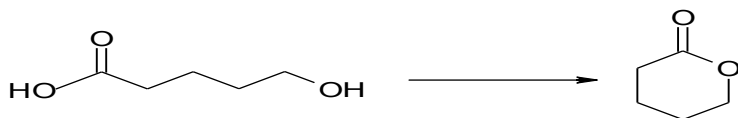
b) (2)



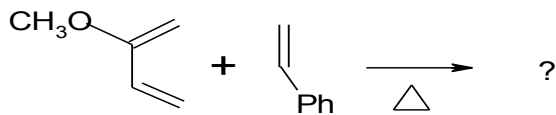
7. Write retrosynthetic routes for ethyl-2-oxocyclopentane carboxylate. (5)

8. Write the total synthesis of Reserpine. (10)

9. How will you do the following conversion?



10. Predict all the possible products and identify the major product.



11. How will you effect the following conversion?



12. Illustrate the use of MOMCl in protecting the -OH group of an alcohol and show how the protecting group is removed.

13. Write any two methods to synthesis uracil.

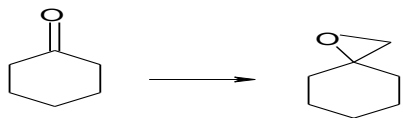
14. Write the total synthesis of Quinine. 10
15. Write the retrosynthesis of the following molecules. 5 + 5
- a) Pentane-2,4- dione
- b) Ethyl-2-oxocyclopentane carboxylate
16. a) Explain the use of 1,3-dithiane in protecting the carbonyl group of a ketone with an example. 5
- b) How will you effect the following conversion? 5



17. How will you do the following conversion? (5)

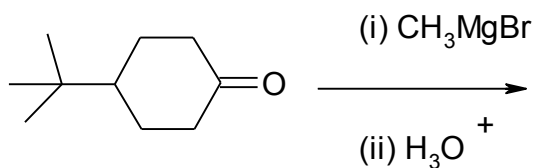


18. Write the synthesis of the tripeptide gly – Ala – Val from aminoacids.(5)
19. Write the synthesis of Vitamin-A₁ by Reformatsky method. (5)
20. Explain the steps involved in the synthesis of peptides using Merrifield resin. (5)
21. Write a synthetic route for the Conversion of cholesterol to progesterone.(5)
22. How is F-moc introduced and removed in an amino acid ? Give an example.(5)
23. How is N-cbz removed from an amino acid using HBr . Give the mechanism. (5)
24. How will you do the following conversion using a sulphur ylide? (5)

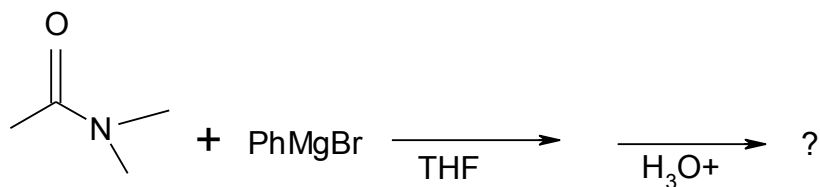


25. predict the product and write mechanism. (5 +5)

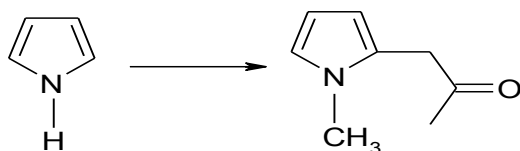
a)



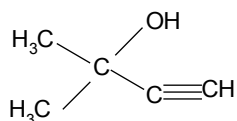
b)



26. How will you do the following conversion?



27. Write a retrosynthetic route for the following molecule.



28. Explain the different steps involved in the synthesis of peptides

using Merrifield resin.

29. Write the synthesis of Reticulene.

30. Write the synthesis of adenine.

31. Explain the bio-synthesis of cholesterol.

32. Write the synthesis of Gly-ala-val.

33. Write a synthetic route for the Conversion of cholesterol to testosterone.

34. Write retrosynthetic routes for the following two molecules.

i) Pentane-2,4- dione ii) ethyl-2-oxocyclopentane carboxylate

35. a) Write the synthesis of Guanine.

(3+3+2+2)

b) Give an example for Robinson annulation and explain its mechanism.

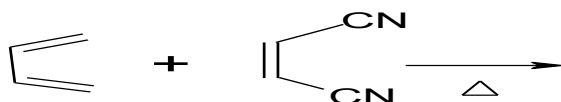
c) What sequence of bases on one strand of DNA complementary to the sequence T-A-T-G-C-A-T on the other strand.

d) Discuss the Umpolung concept.

36. How is F-moc introduced and removed in an amino acid? Give an example.

37. How is N-cbz removed from an amino acid using HBr. Give the mechanism.

38.



39. What sequence of bases on one strand of DNA is complementary to the sequence T-A-T-G-C-A-T on the other strand?

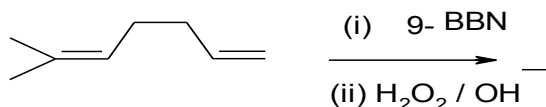
40. Illustrate the use of t-Boc in peptide synthesis with an example.

41. How will you do the following conversion? Give the mechanism.



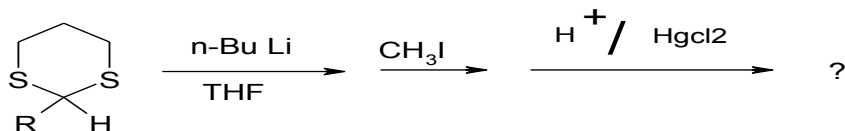
42. Write the synthesis of the tripeptide gly – Ala – Val from amino acids.

43.



44. Write the synthesis of Vitamin-A₁ by Reformatsky method.

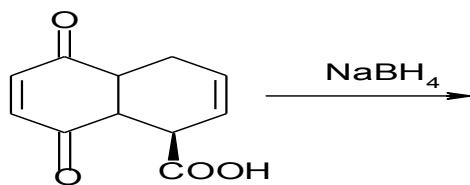
45. Give the products of all stages.



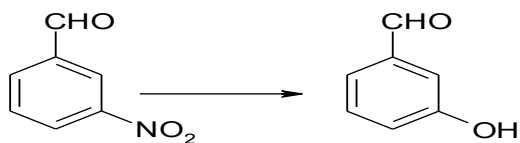
46. Explain the steps involved in the synthesis of a peptide using Merrifield resin.

47. Explain the structure of DNA.

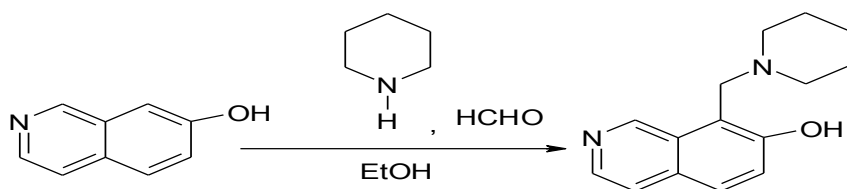
48. Predict the product of the following reaction.



49. Suggest a method for doing the following conversion.

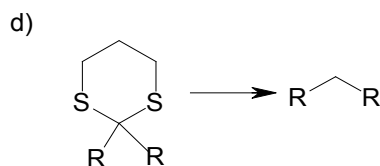
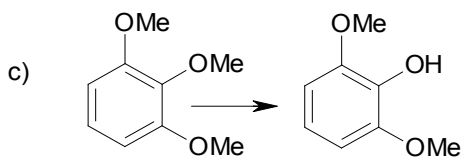
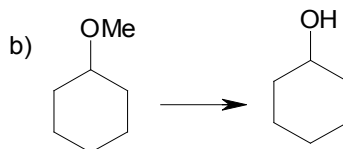
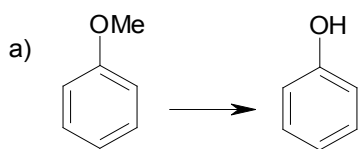


50. Suggest a suitable mechanism for the following reaction.

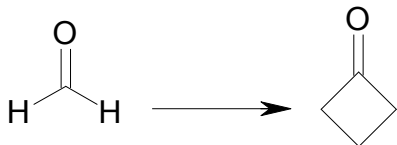


51. How F-moc is introduced into and removed from an amino group? Give the mechanisms involved.

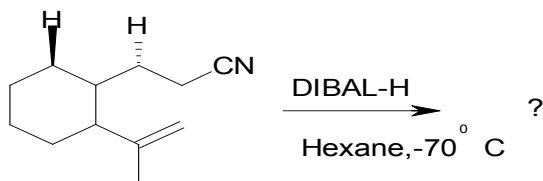
52. Give the reagents involved in the following conversions.



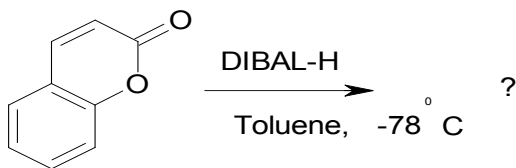
53. How will you do the following conversion? Give the reaction mechanism.



54. Complete the following.



55. Predict the product and give the mechanism.



56. a. Write the total synthesis of Cocaine with the mechanisms involved in the reactions. (5)

b. Write the synthesis of the tripeptide Gly-ala-val from the respective amino acids. (5)

57. Write the total synthesis of Quinine. (10)

58. a. What are phase transfer catalysts? Discuss any two applications of PTC. (7)

b. What are polymer supported reagents? Mention the applications of it. (3)

59. Explain the different steps involved in the synthesis of peptides using Merrifield resin. (4)

60. Write the synthesis of Gly-ala-val. (5)

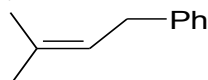
61. What are nucleotides? Explain the structures of nucleotides. (4)
62. Explain the steps involved in protein synthesis by Nucleic acids. (5)
63. Write the total synthesis of Quinine. (7)
64. Explain how will you synthesize a nitrile from an alkyl halide using phase transfer catalyst. (5)
65. Write in brief about Fmoc protecting group. (5)
66. Give the synthetic utility of 1,3 dithiane (5)
67. Explain D.C.C as a dehydrating agent. (5)
68. Give any one method of synthesis of vitamin A₁.

69. How will you synthesis Hygrine from Pyrrole?.

70. How F-moc is introduced into and removed from an amino group?. Give the mechanisms involved.

71. Write the synthesis of gly- lys-phe.

72. Write a retrosynthesis for the following molecule.



73. Write a note on the synthesis of proteins with the assistance of nucleic acids.

74. Write the total synthesis of Reserpine. (10)

75. a) Write the total synthesis of Cocaine with the mechanisms involved in the reactions. (5)

b) Write the steps involved in SPPS. (5)

76. a) How will you prepare imidazole from tartaric acid dinitrate? (3)

b) Compare the synthetic methods of thiazole from α -chloro acetaldehyde and from 2-amino thiazole. (4)

c) What are azlactones? How are they prepared from

o-aminophenol?

(3)