 LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**M.Sc.** DEGREE EXAMINATION - **CHEMISTRY**

SECOND SEMESTER – **APRIL 2012**

# CH 2953 - CHEMISTRY OF HETEROCYCLICS AND NATURAL PRODUCTS

Date : 24-04-2012 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**Part-A**

***Answer ALL questions*: (10 × 2 = 20 Marks)**

01. Compare the aromaticity of pyrrole, thiophene and furan.

02. How is a carbazole synthesized?

03. Mention the pharmacological activities of alkaloids.

04. What is Herzig Meyer method of estimation of alkaloids?

05. What are tannins? How are they different from flavonoids?

06. Define the following

a) isoprene rule b) gem-dialkyl rule

07. How is the presence of C-methyl group determined?

08. Give the Ziesel’s method of estimation of –OCH3 groups in anthocyanins.

09. How is the position of double bond in zinziberene confirmed?

10. Give the mechanism for the following conversion.



**Part-B**

***Answer any EIGHT questions*: (8 × 5 = 40 Marks)**

11. Nucleophilic substitution takes place readily on pyridine than benzene. Why?

12. Explain the reactivity of quinoline towards electrophilic substitution reaction.

13. What is the end product of Hoffmann degradation of N-methylpiperidine?

14. How is atropine synthesized?

15. Explain the following reactions.

a) Hoffmann exhaustive methylation reaction

b) Zerewitinoff reaction

16. Explain Baker Venkataraman synthesis of flavonoids.

17. Effect the conversion of 2-(1-naphthyl)ethylmagnesium bromide to Diels hydrocarbon.

18. Mention the use of the following reagents in the structural characterization of squalene.

a) Na/amyl alcohol    b) Ac2O/1% H2SO4

19. Discuss the structural elucidation of cadinene.

20. Give the structure of gibberellic acid. How would you prove the presence of   
 (i) lactone ring and      ii) two types of -OH groups in it?

21. Give the Robinson method of synthesis of hirsutidin chloride.

22. Elucidate the structure of pelargolidin chloride

**Part-C**

***Answer any FOUR questions:* (4 × 10 = 40 Marks)**

23. a) Explain the electrophilic and nucleophilic substitution reactions in quinoline. (6)

b) How is thiophene synthesized from furan? (4)

24. a) Write the classification of alkaloids with examples. (5)

b) What are flavonoids? Mention their biological importance. (5)

25. Write the complete structural elucidation of Morphine. (10)

26. a) Effect the following conversions. (2 × 2.5)

i) camphoric acid to camphor

  ii) cadinene to 2,7-dimethylcadalene

b) Identify A-E in the following. (5)



27. Discuss the structural elucidation of zinziberene. (10)

28. a) Give the synthesis of oestrone from 3-(3-methoxyphenyl)-1-bromopropane. (5)

b) Discuss the structural elucidation of cyanidin chloride. (5)

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