LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **APRIL 2013**

CH 2953 - CHEMISTRY OF HETEROCYCLICS AND NATURAL PRODUCTS

Date : 04/05/2013 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

Part-A

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

01. Write the biological importance of indole derivatives.
02. How is uric acid extracted from natural sources?
03. How is the dimethoxymethyl group of alkaloids estimated?
04. Group the following alkaloids according to their occurrence.

    Papavarine, cocaine, atropine, morphine
05. What are depsides? Mention their biological importance.
06. Mention the prefixes used to represent the following functional groups in steroids.

    a) methylene group b) three membered ring

    c) ring fission & addn. of hydrogen
07. How is camphoronic acid synthesized from acetoacetic ester?
08. How are -OCH_3 groups on anthocyanin estimated?
09. Give one method of confirming the presence of lactone ring in giberrellic acid?
10. How is the position of double bond in zinziberene confirmed?

Part-B

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

11. How is pyrrole nitrated? Why protic acids are not used for electrophilic substitution reactions of pyrrole?
12. Mention the biological importance of thiazoles. How is luciferin synthesized?
13. How are the following compounds synthesized?
    a) uracil b) imidazole
14. Write the structural elucidation of cocaine.
15. How is morphine synthesized?
16. Explain the biosynthesis of flavonoids.
17. Effect the conversion of cadinene to 2,7-dimethylcadalene
18. Give the Willstatter's synthesis of anthocyanidins.
19. Give the synthesis of oestrone from 3-(3-methoxyphenyl)-1-bromopropane.
20. Discuss the structural elucidation of cadinene.
21. How is the presence of fluorene nucleus in gibberic acid confirmed by degradation reaction?

22. Discuss the structural elucidation of cyanidin chloride.

Part-C

Answer any **FOUR** questions. ($4 \times 10 = 40$ Marks)

23. a) How is pyrazine synthesized from ethylene diamine? (5)

    b) How is vitamin E synthesized? (5)

24. Elucidate the structure of papaverine. (10)

25. a) Write a short note on Tannins. (4)

    b) What is Emde degradation? How is it an alternative technique to Hoffmann method? (6)

26. Effect the following conversions. (5+5)

    a) camphoric acid to camphor

    b) 2-(1-naphthyl)ethylmagnesium bromide to Diels hydrocarbon

27. Explain the use of the following reagents in the structural characterization of squalene. (4×2.5)

    i) H_2/catalyst ii) Na/amyl alcohol

    iii) Ac_2O/1% H_2SO_4 iv) CrO_2Cl_2/CCl_4

28. a) Effect the following conversion (2×2.5)

    i) retene into biphenyl ii) carvone to cadalene

    b) Give the Robinson method of synthesizing hirsutidin chloride. (5)

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