

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86  
(For candidates admitted during the academic year 2004 –05 & thereafter)

SUBJECT CODE: CH/MC/OC54  
B.Sc. DEGREE EXAMINATION, NOVEMBER 2007  
BRANCH IV- CHEMISTRY  
FIFTH SEMESTER

REG.NO .....

COURSE : MAJOR CORE

PAPER : ORGANIC CHEMISTRY-II

TIME : 30 MINUTES

MAX.MARKS : 30

SECTION – A

(30x1=30)

ANSWER ON THE QUESTION PAPER ITSELF.

Answer all the questions.

I Choose the correct answer:

(10x1=10)

- Secondary amines with Carbon-di-sulphide forms \_\_\_\_\_  
a) dithiocarbonic acids                      b) dicarboxylic acids  
c) monocarboxylic acids                      d) hydroxy acids
- Separation of amino acids by electrophoresis is based upon the difference in their \_\_\_\_\_.  
a) Solubility                                      b) Isoelectric point  
c) molecular weight                              d) both solubility and pH.
- The reaction of benzene diazonium chloride with nitrobenzene to form p-intro biphenyl is \_\_\_\_\_.  
a) Gattermonns reaction                      b) Gomberg reaction  
c) Coupling reaction                              d) Sand Meyer reaction
- Alizarin is an example of \_\_\_\_\_.  
a) Mordant dye                      b) Vat dye                      c) Azo dye                      d) triphenylmethane dye
- Huckel's rule for aromaticity is \_\_\_\_\_.  
a)  $(4n + 2)\pi$                       b)  $(4n + 4)\pi$                       c)  $(4n + 1)\pi$                       d)  $(4n + 3)\pi$
- The flagpole Hydrogen interaction is present in \_\_\_\_\_ form of cyclohexane  
a) boat form                      b) chair form                      c) twist-boat form                      d) both chair and boat forms
- The more stable conformation of n-butane is \_\_\_\_\_.  
a) skew                      b) eclipsed                      c) gauche                      d) anti
- The optically inactive amino acid is \_\_\_\_\_.  
a) Glycine                      b) alanine                      c) Leucine                      d) cysteine
- Aniline with  $\text{Br}_2/\text{H}_2\text{O}$  forms \_\_\_\_\_.  
a) 2-br omophenol                                      b) 4-bromophenol  
c) 2,4,6-tribromophenol                                      d) 2,4-dibromophenol

10. The mordant used for basic dye is  
 a) tannin                      b) metal hydroxide                      c) HCl                      d) NaOH

**II State true or false. (5x1=5)**

11. [16] Annulene is aromatic.  
 12.  $\alpha$ -amino acids give blue colour for ninhydrin reaction.  
 13. The order of basicity of amines is  $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$ .  
 14. The conformation of butane with the dihedral angle,  $\theta = 60^\circ$  is known as gauche conformation.  
 15. Benzene diazonium chloride with phenol forms the orange dye, p-amino azo benzene.

**III Fill in the blanks: (5x1=5)**

16. The product obtained by the reduction of diazomethane by sodium amalgam is \_\_\_\_\_.  
 17. The c-terminal of an aminoacid can be identified by \_\_\_\_\_.  
 18. The major product obtained by the nitration of thiophene is \_\_\_\_\_.  
 19. p-nitroso dimethyl aniline with an alkali forms \_\_\_\_\_.  
 20. The equatorial methyl groups in methyl cyclohexane adopt an \_\_\_\_\_ conformation.

**IV. Match the following: (5x1=5)**

- |                         |   |                                     |
|-------------------------|---|-------------------------------------|
| 21. Hoffmann method     | - | preparation of polypeptide          |
| 22. Reductive amination | - | pyrrole to pyrrole-2-carboxaldehyde |
| 23. Strecker Synthesis  | - | benzaldehyde to benzylamine         |
| 24. Gattermann reaction | - | amide to amine                      |
| 25. Bergmann method     | - | aldehyde to amino acid              |

**V Answer in one or two sentences: (5x1=5)**

26. What is Zwitter ion?  
 27. Draw the structure of crystal violet.  
 28. Compare the basicity of pyrrole and pyridine.  
 29. Which is aromatic, cyclopentadiene or cyclopentadienyl anion?  
 30. Give any one method of preparation of aniline.



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**MAX.MARKS : 70**

**SECTION – B**

**(5x6=30)**

**ANSWER ANY FIVE QUESTIONS**

1. Explain Hinsberg's method of separation of amines.
2. What are the products obtained by the reduction of nitro benzene?
3. How is N-terminal of an amino acid determined by Sanger's method?
4. Distinguish primary, secondary and tertiary nitro compounds by the reaction with nitrous acid.
5. How is quinoline prepared by Skraup's synthesis?
6. Explain the halogenation of pyridine with mechanism.
7. Explain the three conformational isomers of cyclohexane and the interactions in each.

**SECTION – C**

**(2x20=40)**

**ANSWER ANY TWO QUESTIONS**

8. Explain the primary and secondary structure of proteins.
9. a) Explain any three reactions of diazo methane. (6)  
b) In (1,2) (1,3) and (1,4) of disubstituted cycloalkanes when is a conformation called cis or trans ? (6)  
c) How nitro ethane be differentiated from ethylnitrite. (4)  
d) How is  $\text{CH}_3\text{NH}_2$  converted to  $\text{C}_2\text{H}_5\text{NH}_2$  and vice versa (4)
10. How are the following prepared?  
a) Malachite green  
b) Phenolphthalein  
c) Indigo  
d) Congo red

11. a) A, B and C are the three organic compounds having C, H and N only. With nitrous acid 'A' yields nitrogen and methanol. 'B' does not react with nitrous acid but when treated by Hoffmann exhaustive methylation yields methanol and trimethylamine. 'C' reacts with nitrous acid to give oily substance which may be reduced to unsymmetrical dimethyl hydrazine,  $(CH_3)_2 - N - NH_2$ . Give the formulae of A, B and C ? (10)
- b) What will happen when nitro benzene is treated with  
(i) Zn/alc. NaOH (ii)  $LiAlH_4/H_3O^+$  (5)
- c) Give any two synthetic applications of benzene diazonium chloride. (5)

