

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 2009
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:

- The structure of nitroparaffins is isomeric with
a) alkyl nitrites b) alkyl nitrates c) alkyl cyanides d) alkyl cyanates
- Which one of the following undergoes carbylamine reaction?
a) methyl amine b) dimethyl amine c) trimethyl amine d) ammonia
- The optimum pH for coupling of an amine with a diazonium salt is
a) 9 b) 10 c) 4 d) 7
- Glycine is
a) an antibiotic b) a protein c) an amino acid d) a carbohydrate
- Which among the following can function as a diene?
a) pyridine b) furan c) pyrrole d) thiophene
- The most stable conformation of cyclohexane is
a) boat b) twist boat c) chair d) half chair

II Fill in the blanks:

- The dye formed by the coupling of the benzenediazonium chloride with aniline is _____.
- The reduction of nitroalkanes with Zn/NH_4Cl yields _____.
- Peracids oxidize tertiary amines to _____.
- The building block of proteins are _____.
- The enzyme used in C-terminal residue analysis is _____.
- In chlorophyll, magnesium is at the center of a _____ ring system.

III Match the following:

- | | | | |
|-----|-----------------------|---|---------------------------------|
| 13. | $(4n+2)\Pi$ electrons | - | nitro-acinitro system |
| 14. | Indigo | - | azulene |
| 15. | Nitro compounds | - | Zwitter ion |
| 16. | Amino acids | - | anthranilic acid |
| 17. | Quinoline | - | amido-imidole system |
| 18. | Isatin | - | α, β - Benzopyridine |

IV State true or false.

19. Amines undergo condensation with aldehydes to give Schiff's bases.
20. Benzenediazonium chloride is prepared in strong basic medium.
21. Indole gives a cherry red colour with pine splint moistened with alcohol.
22. [10] annulene is aromatic.
23. Malachite green is an azo dye.
24. Vat dyes are insoluble in water.

V Answer in one or two sentences:

25. Why aniline is a weaker base than ethylamine?
26. Write the resonance structure of diazomethane.
27. What is a peptide bond?
28. Arrange pyrrole, furan and thiophene in the decreasing order towards electrophilic substitution reactions.
29. What are conformers?
30. Give the structure of phenolphthalein.



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COURSE : MAJOR CORE
PAPER : ORGANIC CHEMISTRY-II
TIME : 2 ½ Hours

MAX.MARKS : 70

SECTION – B

(5x6=30)

ANSWER ANY FIVE QUESTIONS

- Complete the following reactions
 - $C_6H_5NO_2 \xrightarrow{Sn/HCl} ?$
 - $O_2NCH_2CH_3 + HNO_2 \rightarrow ?$
 - $NO_2CH(CH_3)_2 + HNO_2 \rightarrow ?$
 - $C_6H_5NH_2 + NaNO_2 + 2HCl \xrightarrow{0-4^\circ C} ?$
 - $C_6H_5N_2^+Cl^- + CuCl \rightarrow ?$
 - $C_6H_5N_2^+Cl^- + HBF_4 \xrightarrow{\Delta} ?$
- Write short notes on a) isoelectric point b) zwitter ion (2 ½ + 2 ½)
- How can you separate a mixture of primary, secondary and tertiary amines by Hofmann's method.
- Give the Skraup synthesis of quinoline.
- Give the oxidation reaction of quinoline, isoquinoline and indole.
- Discuss the conformations of butane along with energy diagram.
- Discuss the classification of dyes based on applications.

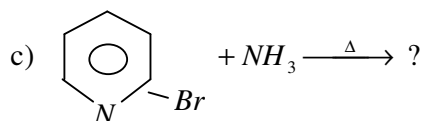
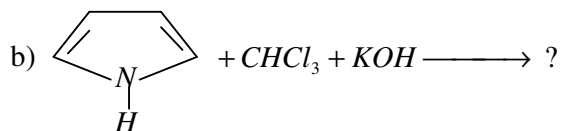
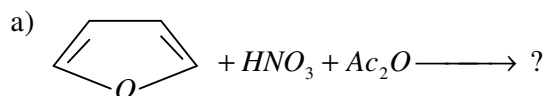
SECTION – C

(2x20=40)

ANSWER ANY TWO QUESTIONS

- Explain the mechanism of nitration of benzene. (6)
 - Predict the products (2+2)
 - $C_6H_5NO_2 \xrightarrow{:OH^-} \text{_____} + \text{_____} .$
 - $2CH_2N_2 + RCOCl \longrightarrow \text{_____} \xrightarrow{H_2O} \text{_____} .$
 - How can be Hinsberg test be used to distinguish primary, secondary and tertiary amines? (6)
 - How will you obtain *p* – bromoaniline from aniline? (4)

9. (i) Discuss the structure of benzenediazonium chloride. (6)
 (ii) Describe the synthesis of glycylalanine. (4)
 (iii) Explain the primary and secondary structure of proteins in detail. (10)
10. (i) Describe the Bischler Napieralski synthesis of isoquinoline. (6)
 (ii) Name two food colours commonly used. (2)
 (iii) Write the products of the following reactions and give the mechanism. (4+4+4)



11. (i) How are malachite green and alizarin synthesized? (4+4)
 (ii) What is a leuco – base ? (2)
 (iii) Write a note on Bayer's strain theory. (5)
 (iv) Explain Huckel's theory of aromaticity. (5)

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