

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86**  
**(For candidates admitted during the academic year 2006-07)**

**SUBJECT CODE : CH/PC/OC14**

**M.Sc. DEGREE EXAMINATION, APRIL 2007**  
**BRANCH IV – CHEMISTRY**  
**FIRST SEMESTER**

**REG.NO .....**

**COURSE : CORE**

**PAPER : ORGANIC CHEMISTRY**

**TIME : 30 MINS**

**MAX. MARKS :20**

**SECTION – A**

**TO BE ANSWERED ON THE QUESTION PAPER ITSELF.**

**Answer all the questions.**

**(20 x 1= 20)**

**I. Choose the correct answer:**

- Which is the stablest
- Glucose forms \_\_\_\_\_ stereo isomers  
a) 4            b) 6            c) 8            d) 10
- Formation of dinadical is termed as  
a) E1            b) E2            c) E $\alpha$             d) E $i$
- The 1,2 (biphenyl propyl) trimethyl ammonium ion undergoes E2 elimination with NaOEt. Which of the following is true?  
a) threo gives trans olefin  
b) erythro gives cis olefin  
c) threo reacts faster than erythro  
d) all the above are correct
- The preferred conformation of trans 1-t-butyl 4 methyl cyclohexane is  
a) ae    b) le    c) ea    d) aa for t-Butyl and methyl respectively
- Which reacts fastest with  $\text{NaNH}_2 / \text{liq NH}_3$

7. A good solvent for  $S_N^2$  is  
 a) polar protic      b) polar Aprotic      c) non polar      d) non aqueous
8. Acid catalysed dehydration of  $\phi-CH_2-CH(OH)-CH_3$  forms .....  
 in major amount  
 a)  $\phi CH = CH-CH_3$       b)  $\phi CH_2-CH = CH_2$   
 c)  $H_3C-\text{C}_6\text{H}_4-CH = CH_2$       d)  $\phi-\underset{\text{CH}_3}{C} = CH_2$

**II. Fill in the blanks:**

9. When the drug ..... was introduced, the chirality of drugs gained a lot of focus.
10. Carbenes as a rule are ..... stable than free radicals.
11. The rearranged product for the reaction,  
 $R-CH=CH-CH_2 X \longrightarrow \text{_____?_____} ..$
12. The decomposition of alkyl chloroformate is by ..... mechanism.
13. .... rule predicts which diastereomer is formed in larger amounts.
14. 1,2,3,4,5,6, - hexa chlorocyclohexane has ..... number of isomers.
15. The modern nomenclature for ..... is .....

**III. Answer in a line or two:**

17. Mention does the term 'dissymmetry' mean?
18. Explain a Homotopic Hydrogen.
19. Write the formula of text – pentyl carbonium ion.
20. What is the importance of in dole acetic acid?

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TIME : 2 ½ HOURS

MAX. MARKS :80

SECTION – B

Answer any five questions.

(5 x 8= 40)

1. Write the structure of cholesterol and the nature of the rings.



What are I, II and III ?

- 2.a. Discuss the products formed on the solvolysis of  $\text{CH}_2\text{Cl}$ .  
b. Give the Aac2 mechanism in brief. (5+3)
- 3.a. Diphenyl methyl anion is exceptionally stable; but decomposes on exposure to water. Why? (4)  
b. I-Phenyl 2 propanol on treatment with TsCl forms the tosylate ester with S configuration which on treatment with  $\text{CH}_3\text{COOK}$  forms the R product. Explain. (4)
- 4.a. How is the formation of Nitronium ion during nitration reaction proved?  
b. How is the formation of Benzyne intermediate proved? (4+4)
- 5.a. \_\_\_\_\_ forms a carbene readily. What is the reaction mechanism, what is the other product formed?
- b. What is the preferred conformation of the following and why?  
i) trans – 1- chloro, 3-hydroxy cyclohexane  
ii) trans – 4 – hydroxy, cyclohexane carboxylic acid. (4+4)
6. Explain asymmetric synthesis with an example.

7. How is the structure of papaverine determined?  
(no need of giving synthesis)

**SECTION – C**

**Answer any two questions.**

**(2 x20= 40)**

- 8.a. What are the products when Quinoline and isoquinoline are subjected to Hofmann's exhaustive methylation.
- b. Outline the synthesis of Reserpine.
- c. Give the conformational analysis of decalins. (6+9+5)
- 9.a. What is the order of the migratory aptitudes of Me, Et and  $\phi$  groups.  
Explain the same with one example each.
- b. I-acetamido propenoic acid on treatment with  $H_2$  in the presence of Wilkinson's Catalyst forms a racemic mixture of acetyl alanins. Explain how the method can be modified to get one enantiomer of 100% optical purity.
10. Account for the following
- a. Benzene and hexadeutero benzene undergo nitration at the same rate.
- b. I- phenyl ethanol reacts with  $SOCl_2$  to give the chloride with retention in configuration. Why?
- c. Trans and Cis 2- butanes are formed in the ratio 6:1 when 2-chloro butane is treated with alcoholic Potash.
- d.
- e. is uncreative to substitution. Why?
- e. Base catalysed hydrolysis of esters is irreversible but acid catalysis is reversible.