

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted from the academic year 2015-16 & thereafter)**

**SUBJECT CODE: 15CH/MC/OC24**

**B.Sc. DEGREE EXAMINATION, APRIL 2018**  
**BRANCH IV - CHEMISTRY**  
**SECOND SEMESTER**

**COURSE : MAJOR – CORE**  
**PAPER : ORGANIC CHEMISTRY - I**  
**TIME : 3 HOURS**

**MAX. MARKS : 100**

**SECTION – A**

**ANSWER ALL THE QUESTIONS.**

**(30x1=30)**

**I Choose the correct answer.**

- Geometrical isomerism is exhibited by a compound when there is a  
a) free rotation about C-C bond                      b) triple bond  
c) restricted rotation about C-C bond                d) Bridgehead carbon
- The Meso form of Tartaric acid is optically inactive due to  
a) No chiral centre                                        b) Internal compensation  
c) External compensation                                d) All of the above.
- Retention of configuration is observed for  
a)  $S_N2$     b)  $S_N1$     c)  $S_{Ni}$     d) All of the above
- The  $-Cl$  group directs the incoming group to  
a) Ortho/Para    b) Meta    c) Ipso    d) None of the above
- Satzyeff product is  
a) Less substituted alkene                                b) disubstituted alkene  
c) more substituted alkene                                d) cycloalkane.
- Ozonolysis of cyclohexene yields the following compound  
a) 1,3-dicarbonyl    b) 1,4-dicarbonyl  
c) 1,5-dicarbonyl    d) 1,6-dicarbonyl
- In Cannizaro reaction the products obtained are  
a)  $\alpha$ - &  $\beta$ -hydroxy ketones                            b) acid and alcohol  
c) acid and phenol    d) aldehyde and ketone
- The intermediate formed during Reimer-Tiemann reaction is  
a) Nitrene    b) Carbene    c) Ketene    d) Alkene
- During reduction, hydride transfer takes place for the following reagent  
a)  $NH_2NH_2/KOH$     b)  $Zn-Hg/HCl$     c)  $LiAlH_4$     d) All of the above
- When a cyclic ketone undergoes Baeyer-Villiger oxidation the product obtained is  
a) Lactam    b) Lactone    c) Lactate    d) None of the above

**II Fill in the blanks:**

11. A conformation with a \_\_\_\_\_ dihedral (torsional) angle is known as staggered conformation.
12. R/S notation was given by the scientists \_\_\_\_\_.
13. Benzene gives Diels-Alder adduct with \_\_\_\_\_.
14. The reactivity of Aniline towards electrophilic substitution can be reduced by converting  $\text{-NH}_2$  group to \_\_\_\_\_ group.
15. The  $\text{E}_2$  mechanism involves a \_\_\_\_\_ mechanism where departure of  $\beta$  - hydrogen and leaving group takes place simultaneously.
16. Peroxide effect during addition of alkene is also known as \_\_\_\_\_.
17. Crotonaldehyde is obtained when acetaldehyde undergoes \_\_\_\_\_ reaction.
18. In \_\_\_\_\_ reaction  $\alpha$ -haloester reacts with ketone in the presence of  $\text{Zn}/\text{H}_2\text{O}$  to give  $\beta$ -hydroxy ester.
19. Bromoform can be prepared by the action of  $\text{Br}_2/\text{HO}^-$  on \_\_\_\_\_.
20. The reaction which employs acidic condition for the reduction of carbonyl group is known as \_\_\_\_\_.

**III State whether true or false:**

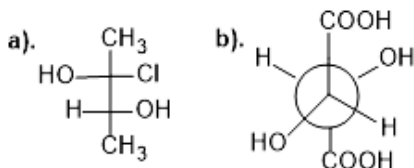
21. Dextro isomers rotate plane polarized light to left in a polarimeter.
22. Fuming nitric acid is  $\text{H}_2\text{S}_2\text{O}_7$ .
23.  $\text{KMnO}_4$  gives anti product during hydroxylation.
24. Acetone exhibits less nucleophilicity than acetaldehyde.
25. In Oppenauer oxidation an alcohol is converted to a ketone.

**IV Answer in a line or two:**

26. Define the term conformation.
27. How the acylium ion is stabilized by resonance?
28. Give two reagents for carrying out epoxidation.
29. What are active methylene compounds?
30. What is Benzoin condensation?

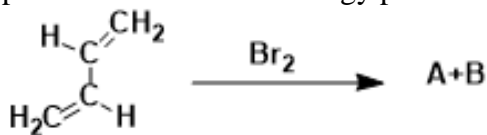
**Section – B****Answer any five questions.****(5 x 6 = 30)**

31. What are diastereomers? Explain with an example?
32. Convert the given Fischer to Newmann & Newmann to Fischer projection through Sawhorse.



33. Why Friedel-Crafts acylation is synthetically useful than Friedel-Crafts alkylation?

34. Explain E<sub>1</sub>C<sub>B</sub> mechanism with suitable example.  
 35. Predict the products of the following conversion and comment about the stability of the products formed with energy profile diagram.



36. What is aldol? Illustrate its preparation with suitable example.  
 37. Explain with mechanism the crossed Cannizzaro reaction.

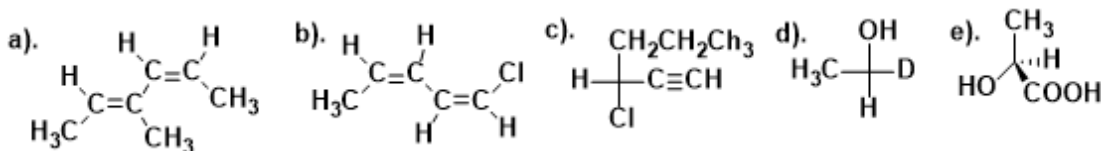
### Section – C

Answer any two questions.

(2 x 20 = 40)

38. i) Write E/Z, R/S notations for the following compounds

(10+10)



- ii) Compare stereoselective and stereospecific reactions with suitable examples.

39. a) Benzyne mechanism is also called as elimination-addition mechanism. Why? Give evidences in favour of this mechanism.

- b) Explain the following reactions with suitable examples.

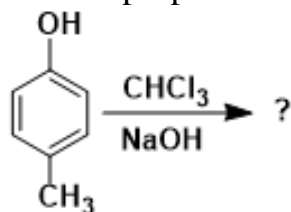
- i) Houben-Hoesch reaction ii) Reformatsky reaction

(10+10)

40. a) Compare S<sub>N</sub>1 and S<sub>N</sub>2 reactions.

(5+5+10)

- b) Complete and propose a suitable mechanism for the following reaction



- c) Explain with examples both Markownikoff and anti-Markownikoff products formed during addition reactions of alkene.

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