STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2011-12 & thereafter)
SUBJECT CODE: 11CH/MC/OC64
B.Sc. DEGREE EXAMINATION, APRIL 2015
BRANCH IV - CHEMISTRY
SIXTH SEMESTER

Reg. No ……..

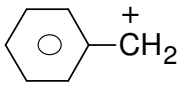
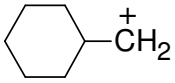
COURSE : MAJOR – CORE
PAPER : ORGANIC CHEMISTRY - III
TIME : 30 MINUTES **MAX. MARKS : 30**

SECTION – A

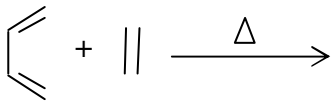
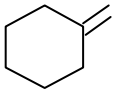
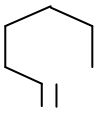
TO BE ANSWERED ON THE QUESTION PAPER ITSELF.
ANSWER ALL THE QUESTIONS. **(30x1=30)**

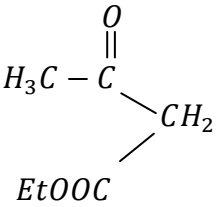
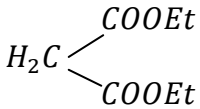
I Choose the correct answer.

1. Reaction between $NaOH$ and _____ yield dichlorocarbene.
   a) CH_3Cl b) CH_2Cl_2 c) CH_3Cl d) CCl_4

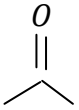
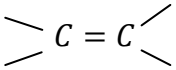
2. Which of the following is most stable carbocation?
   a) CH_3^+ b) $CH_3CH_2^+$ c)  d) 

3. _____ can exhibit zwitter ionic.
   a) CH_3COOH b) CH_3NH_2 c) $H_3C-\underset{\displaystyle NH_2}{\underset{|}{CH}}-COOH$ d) $H_3C-\underset{\displaystyle NH_2}{\underset{|}{CH}}-NH_2$

4. Predict the product  ?
   a)  b)  c)  d) 

5. An active methylene carbon present in _____
   a) $H_3C\ CH_2\ CO\ CH_2\ COOEt$ b) 
   c)  d) all the three

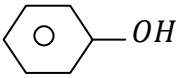
6. Ethylene glycol used to protect _____ functional group.

a)  b)  c) $-NH_2$ d) all the three

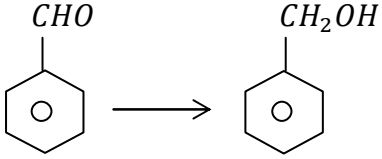
7. $\beta-$ carotene is a _____

a) steroid b) alkaloid c) terphenoid d) drug

8. Acctic anhydride can react with _____ functional group in an alkaloid.

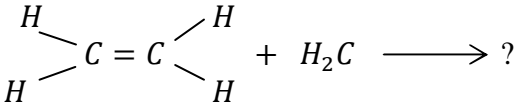
a) $R-OH$ b) $R-NH_2$ c)  d) all the three

9. Choose a reagent for the following conversion



a) $LiAlH_4$ b) $NaOH$ c) KOH d) $KMnO_4$

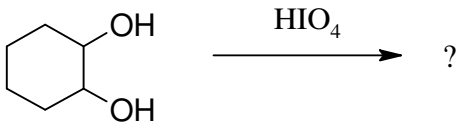
10. Choose the product for the following reaction

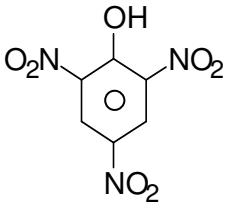


a)  b) $H_3CCH_2CH_3$ c) $H_3C-\underset{\displaystyle CH_3}{\underset{|}{CH}}-OH$ d) $H_3C-CH_2-CH_2-CH_3$

II Fill in the blanks.

11. Predict the product:



12. Picric acid  is _____ acidic than phenol.

13. Maleic acid and fumaric acid are examples for _____ isomers.

14. Ninhydrin can be used to determine _____ acid.

15. $RCH_2COCl + RNH_2 \xrightarrow{\text{base}}$?

16. $RCONH_2 \rightarrow RNH_2$ is a _____ degradation reaction.

17. $H_3C - CH_2COCl \xrightarrow{?} H_3C - CH_2CHO$

18. An example for monoterpenoid is _____.

19. Total number of Br_2 molecule added to an alkaloid will determine the number of _____.

20. Predict the product

$$H_3C - CH = CH - CH_2Cl \xrightarrow{OH^-} \underset{?}{A} + \underset{?}{B}$$

III Match the following:

21. Catecol _____ oxidizing reagent.

22. Gabriel's synthesis _____ dihydric phenol.

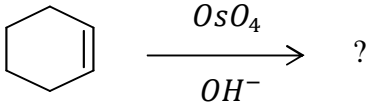
23. Schotten Baumann reaction _____ amino acid.

24. Cholesterol _____ amide synthesis.

25. $KMnO_4$ _____ steroid.

V Answer in a line or two.

26. Predict the product



27. What is Hell-Volhard-Zelinsky reaction?

28. State Blane's rule for carboxylic acid.

29. Write a method to determine the presence of methoxy group in a natural product.

30. Suggest a reagent to protect amino functional group in a chemical.

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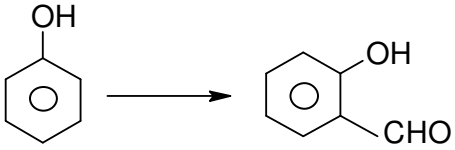
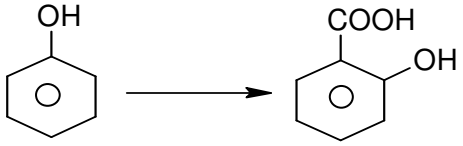
Section – B

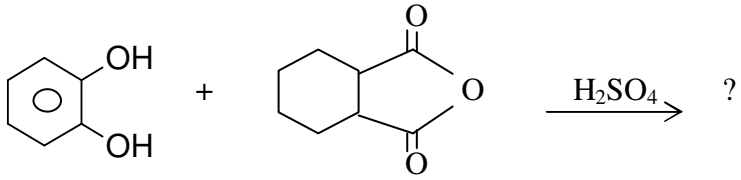
Answer any five questions. **(5 x 6 = 30)**

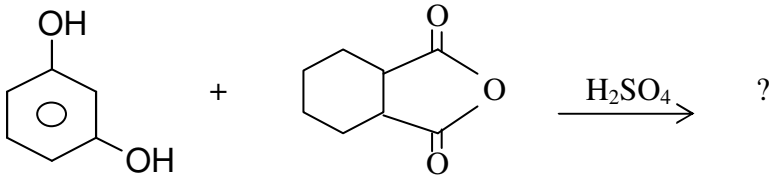
1. How will you carry out the following conversion?

a) 

b) 

2. Predict the product

a) 

b) 

..2

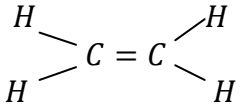
3. Write a note on the following with respect to amino acid
   a) Zwitter ion b) Isoelectric point

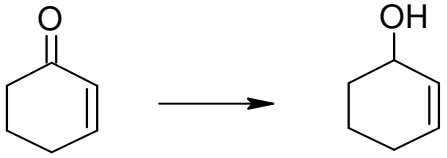
4. a) Explain the mechanism involved in (a) Claisen condensation
   b) Diel's Alder reaction

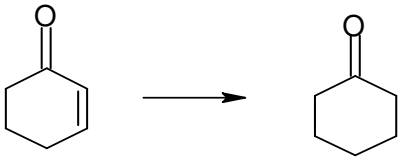
5. a) How are terpenoids classified?
   b) State isoprene rule
   c) What is the basic and common skeleton structure of steroids?

6. Write down the synthesis of nicotine.

7. How will you carry out the following conversion?

   a) $H - C \equiv C - H \longrightarrow$ 

   b) 

   c) 

Section – C

Answer any two questions. **(2 x 20 = 40)**

8. a) Explain the concept and emchanism involved in
      (i) Pinacol-Pinacolone rearrangement (ii) Benzilic rearrangement
   b) Write an appropriate reason for the following statement
      (i) p-nitrophenol more acidic than m-nitrophenol
      (ii) Propanoic acid is less acidic than mono chloroacetic acid.

9. a) Write down the $A_{AC}2$ and $B_{AC}2$ mechanism during hydrolysis of carboxylic ester.

   b) Using acetoacetic ester synthesise the following compounds.

(i) $H_2C - COOH$
$|$
$H_2C - COOH$

(ii) $H_3C - \overset{\overset{O}{\|}}{C} - CH_2CH_3$

10. a) Elucidate the structure of piperine

    b) Write down the synthesis of citral.