STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2015 –16 & thereafter)

SUBJECT CODE: 15CH/MC/OC54

B.Sc. DEGREE EXAMINATION, NOVEMBER 2017
BRANCH IV- CHEMISTRY
FIFTH SEMESTER

COURSE : MAJOR CORE
PAPER : ORGANIC CHEMISTRY-II
TIME : 3 HOURS **MAX.MARKS :100**

SECTION – A **(30x1=30)**

Answer all the questions.
I Choose the correct Answer:

1. The compound with sp^3hybridised hetero atom among the following is
   a. furan b. pyridine c. piperidine d. thiophen
2. The metal ion Co(II) is present in
   a. haemoglobin b. chlorophyll c. vitamin B_{12} d. both b and c
3. For the complex conversion of D-glucose to its corresponding osazone, the minimum number of equivalents of phenyl hydrazine required is
   a. two b. three c. four d. five
4. Glycosidic linkage is not present in
   a. fructose b. maltose c. starch d. lactose
5. Zeisel's method is to determine the number of __ groups present in an alkaloid.
   a. alcoholic b. alkoxy c. amino d. carbonyl
6. The terpene without alcoholic group is
   a. α-pinene b. geraniol c. α-Terpeniol d. nerol
7. Pinacols are __ diols.
   a. 1,2 b. 1,3 c. vicinal d. both a and c
8. The [3,3]sigmatropic rearrangement of 1,5-dienes is called as ___ rearrangement
   a. Fries b. Cope c. Claisen d. Hoffmann
9. Conversionof a cyanide group to the corresponding primary amine is an example for __ reaction.
   a. substitution b. elimination c. reduction d . rearrangement
10. Amino group is protected by converting it into
    a. an alcohol b. a diazonium ion c. a free radical d. an amide

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II Fill in the blanks:

11. The strucure of Indole has benzene ring fused with _____.
12. On complete reduction with H_2/Ni, furan forms_____.
13. One mole of glucose on oxidation with HIO_4 gives _____ moles of formic acid.
14. Maltose is hydrolysed by the enzyme maltase to two moles of _____
15. Oxygenated derivatives of carotenes are called as _____
16. The number of carbon atoms in a diterpene is _____.
17. When the migrating group migrates without its electron pair, the rearrangement is called as _____rearrangement.
18. Hoffmann rearrangement is the rearrangement of amides to _____.
19. $LiAlH_4$ and $NaBH_4$ are mainly used as _____ agents.
20. β-elimination leads to the formation of _____ .

III State whether true or false:

21. Isatin has a diketo group.
22. Anomers of glucose are diastereomers.
23. Nicotine does not possess a tertiary amino group.
24. In Beckmann rearrangement, the group which is on the same side of the –OH group of the oxime migrates.
25. Converison of alkynes to alkenes is an example for addition reaction.

IV Answer in a line or two:

26. What are the products formed when pyrrole and pyridine are nitrated with con.HNO_3 and con.H_2SO_4? Write the reactions.
27. Define mutarotation.
28. State Isoprene rule.
29. What is the intermediate in Curtius rearrangement.
30. What happens when a primary amine is acylated? Write the reaction.

SECTION – B (5x6=30)
ANSWER ANY FIVE QUESTIONS

31. a. Explain Bischer-Napieralski's method of preparation of isoquinoline.

    b. What is a porphyrin and a corrin?

32. a. Convert D-glucose to D-fructose.

    b. Differentiate maltose and cellobiose.

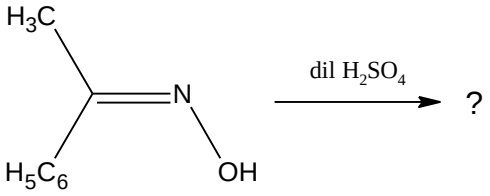
33. a. Draw the structure of lactose. What are the products formed on hydrolysis of lactose using dil.HCl?

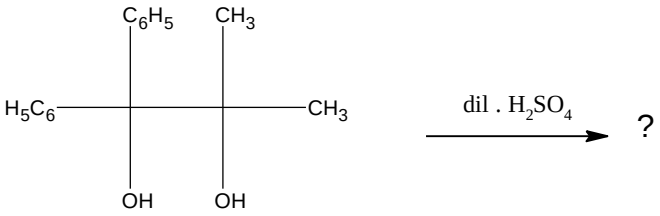
    b. Convert D-Arabinose to D-glucose.

34. Briefly elucidate the structure of themonoterpenecitral.

35. Write a brief note on a) Hezig-Meyer method, b) Classification of terpenoids.

36. Predict the product and propose the mechanism:

a. 

b. 

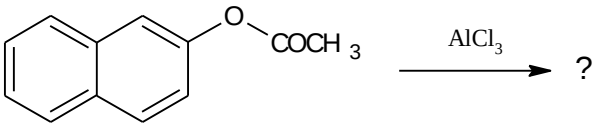
37. Write any one method to protect the following functional groups: alcoholic, phenolic, carbonyl, carboxylic acid.

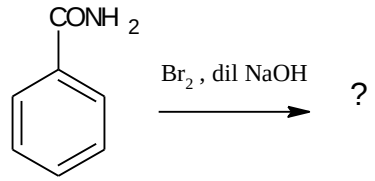
SECTION – C **(2x20=40)**

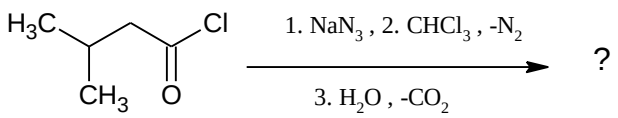
ANSWER ANY TWO QUESTIONS

38. a. Discuss the electrophilic and nucleophilic substitution reactions occurring in quinoline and isoquinoline. (10)
    b. How is the size of the ring determined in glucose? (5)
    c. Explain the structure of starch. (5)

39. a. Elucidate the structure of piperine. (10)
    b. Predict the product and propose the mechanism for the following transformations:

i) 

ii) 

iii) 

(3+3+4)

40. a. Elucidate the structure of α-terpeneol. (10)
    b. Give an example for each of the following type of reactions: addition, elimination, substitution, oxidation and reduction. (5)
    c. Draw the structure of haemoglobin and vitamin B_{12}. (5)

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