STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2011 – 12 & thereafter)

SUBJECT CODE: 11CH/MC/OC34

B.Sc. DEGREE EXAMINATION, NOVEMBER 2015
BRANCH IV- CHEMISTRY
THIRD SEMESTER

REG.NO ……..

COURSE : MAJOR CORE
PAPER : ORGANIC CHEMISTRY-I
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:

1. D-glucose and D-mannose are a pair of_____
   a) enantiomers b) diaseteromers c) epimers d) anomers

2. Which one of the following is a non reducing sugar?
   a) Fructose b) Lactose c) Maltose d) Sucrose

3. In _____ elimination, the two atoms or groups are eliminated from the same atom.
   a) cis b) alpha c) E1 d) E2

4. Acetaldehyde condenses with NH_2-NH-$CONH_2$ to form_____
   a) semicarbazone b) hydrazone c) oxime d) acetal

5. The hybridisation of carbon and oxygen in carbonyl group respectively are
   a) sp and sp^2 b) sp^2 and sp^2 c) sp^2 and sp d) sp^3 and sp^3

6. In _____ , basic solution of hydrazine is the reducing agent
   a) Clemmensen reduction b) Wolff-Kishner reduction
   c) Baeyer Villiger reaction d) Knoevenegal reaction

7. Matose is composed of
   a) glucose and galactose b) glucose and glucose
   c) fructose and galactose d) glucose and mannose

8. When 1,3-butadiene reacts with HBr at high temperature the major product formed follows
   a) 1,2-addition b) 1,4-addition c) 1,3-addition d) 2,3-addition

9. Glucose and fructose can be distinguished by
   a) phenyl hydrazine b) Tollen's reagent c) bromine water d) Fehling's solution

10. Fructose on treatment with sodium amalgam and water gives
    a) sorbitol only b) sorbitol and mannitol c) glycollic acid d) n-hexane

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II Fill in the blanks:

11. When propene reacts with HBr in the presence of peroxide, _____ rule is followed
12. The diastereomers which differ in the configuration at C-1 are called _____
13. When cellulose is completely treated with conc. nitric acid in the presence of conc.H_2SO_4, it gives _____.
14. In substitution, nucleophilic, internal reaction the product has _____ in configuration
15. Phenolic ketone can be prepared by _____ synthesis.
16. Fructose on treatment with hydroxylamine gives_____
17. The catalyst used in benzoin condensation is _____
18. Glycerol when heated with potassium hydrogen sulphate gives_____.
19. Benzaldehyde is treated with acetaldehyde in the presence of NaOH to form ____
20. Lactose is composed of galactose unit and glucose unit joined by _____bond.

III State whether true or false.

21. Benzaldehyde undergoes haloform reaction
22. Cellulose is made up of β-glucose units
23. In triplet carbene, the spins of the electrons are paired up.
24. In Perkin reaction, ketones on treatment with perbenzoic acid in the presence of acid catalyst gives esters.
25. In Oppenauer oxidation, aluminium tertiary butoxide catalyst is used.

IV Answer in a line or two:

26. What is mutarotation?

27. What are L-sugars?

28. State Markownihoff's rule.

29. What is cis elimination?

30. What are carbenes?

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TIME : 2½ Hours **MAX.MARKS : 70**

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

1. Explain the mechanism of benzyne intermediate formation.
2. Discuss the factors that affect elimination and substitution ratio.
3. Explain the classification of carbohydrates
4. Give the products with mechanism
   a) Benzaldehyde + acetic anhydride →
   b) Phenol+$CHCl_3$+KOH
5. How will you effect the following transformation?
   a) Fructose to glucose
   b) Arabinose to glucose
6. Describe Saytzeff and Hoffman rules with examples. Give the reasons for the preference of products formed.
7. Explain the structure and reactions of starch.

SECTION – C (2x20=40)
ANSWER ANY TWO QUESTIONS

8. a) Discuss the mechanisms of $S_N1$and S_N2 reactions. Discuss the effect of solvent, structure of substrate and strength of leaving group.
   b) Explain the method of determination of ring size of glucose. (15+5)

9. a) Discuss keto – enol tautomerism with proof for two forms (8+12)
   b) Give the products
      i) Propene + O_3→
      ii) Propene + B_2H_6→
      iii) Acetaldehyde + methanol ↔
      iv) Acetone + RMgBr →

10. Explain the following reactions with mechanism
    a). Knovenegal reaction
    b). Reformatsky reaction
    c). Cannizaro reaction
    d). Claisen Schmidt reaction
    e). Aldol condensation