Exam. Code : 103203
Subject Code : 1309

B.A./B.Sc. 3rd Semester

CHEMISTRY

(Organic Chemistry—A)

Time Allowed—3 Hours] [Maximum Marks—35

PART—A

Note :— Attempt **all** questions. Each question carries 1 mark.

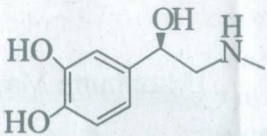
1. Draw all the stereoisomers of 2-3 butandiol.
2. What is the origin of optical activity ?
3. In what aspects *R*-ibuprofen different from *S*-ibuprofen ?
4. pKa of phenol is 10. At what pH, phenol will be in the phenoxide form ?
5. Name and draw the structure of Two natural products having (i) aldehyde and (ii) ketone functional group.
6. Give one method for preparing cis-vicinal diols.
7. Write one reaction showing the synthesis of α, β-unsaturated compound from an aldehyde.
8. What is the most significant use of acetyl salicylic acid ?

PART—B

Note :— Attempt **two** questions from each section. Each question carries **4.5** marks.

SECTION—I

9. You are given a racemic mixture of epinephrine.



Discuss one chemical method for separating the two enantiomers.

10. Write the reaction for the bromination at cis-and trans-2-butene and identify the product/s in each reaction as meso- and racemic mixture. Give suitable explanation for the formation of each product.

11. What will be approximate percentage of axial and equatorial isomers in each of the following cyclohexane derivative :—

    (i) methylcyclohexane

    (ii) cyclohexanol

    (iii) chlorocyclohexane

    (iv) acetyl cyclohexane.

SECTION—II

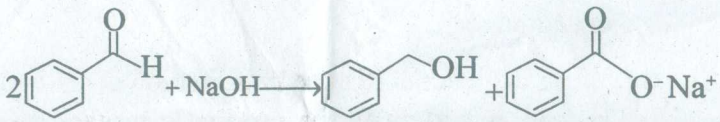
12. With the help of appropriate mechanism, discuss the chemical reaction for the formation of salicyl aldehyde from phenol.

13. What are the synthetic applications of pinacol-pinacolone rearrangement ?

14. Starting with the suitable substrate and using the appropriate reaction conditions, discuss the synthesis of p-hydroxy acetophenone.

SECTION—III

15. The following Cannizzaro reaction was carried out in $H_2{}^{18}O$. It was observed that both benzyl alcohol and sodium benzoate contain ^{18}O. On the basis of this observation, formulate the mechanism for the reaction.



16. Benzaldehyde is liquid at normal temperature and pressure but usually a solid is deposited at the neck of benzaldehyde bottle. What this solid is and how it gets formed ? Discuss the appropriate chemistry involved in this reaction.

17. Discuss the chemistry of iodoform test.