

# SIDO - KANHU MURMU UNIVERSITY, DUMKA

## Important Question

**Subject : chemistry**

**Class : semester 6**

Some important questions of chemistry for semester VI(organic), are given below-

### Carbohydrates

1. How is glucose prepared from sucrose? Discuss its important reactions. Also discuss the open chain structure of D – (+)-glucose.
2. What are the limitations of the open chain structure of D – (+)-glucose? How have these been removed by the cyclic structure?
3. Write a brief account of all the evidences which led to the cyclic structure of D – (+)-glucose.
4. Write all stereoisomeric structures possible for aldopentose and aldohexoses. How are their configurations established?
5. Write short notes on:
  - (a) Ruff degradation
  - (b) Wohl degradation
  - (c) Killiani – Fischer synthesis
  - (d) Mutarotation
  - (e) Anomers and epimers
  - (f) Glycosides and glucosides
6. Draw the Fischer, Haworth projection formulae and the conformational formulae of  $\alpha$ - and  $\beta$ -D-glucose. Which of the two is more stable and why?
7. Draw the Fischer and Haworth projection formulae for (i) maltose (ii) sucrose and (iii) lactose. Give their chemical names also.
8. Draw the structures of starch and cellulose indicating their main points of differences.
9. Write the Haworth projection formulae for the structures of (i) amylose (ii) amylopectin and (iii) cellulose and point out the main differences in their structures.
10. Name the enantiomer of  $\alpha$ -D-(+)-glucose. Also draw its structure.

### Synthetic Dyes

1. Give salient features of electronic theory of colour and constitution.
2. What are Azo dyes? Give the synthesis and discuss the properties of methyl orange and congo red.
3. What are triphenylmethane dyes? Discuss the synthesis of Methyl green and crystal violet.
4. What are phthalin dyes? Discuss the synthesis and properties of fluorescein.
5. What are anthraquinoid dyes? Give the synthesis and properties of Alizarin.
6. What are vat dyes? How is Indigo obtained from natural sources? Discuss the synthesis of indigo from aniline.

7. How is the structure of Alizarin and Indigo established?
8. How is colour produced? Discuss Witt's theory of colour and constitution.
9. Discuss briefly V.B. theory and M.O. theory of colour and constitution.
10. Define chromophores and auxochromes. Discuss their effect on the colour of the substance.
11. What are Dyes? What are the conditions which a substance must satisfy to act as a Dye? How does a Dye exhibit colour?
12. Write short notes on :
  - (a) Methyl orange
  - (b) Congo red
  - (c) Malachite green
  - (d) Crystal violet
  - (e) Indigotin
13. How is the structure of Alizarin established? Discuss the synthesis of Alizarin from anthraquinone.
14. Explain the terms: Acidic dyes, Basic dyes, and Mordant dyes.

### Steroids, Terpenoids and Alkaloids

1. What are steroids? Write the structures of cholesterol indicating the size of the rings, nature and position of the side chain, position of the angular methyl groups.
2. What are terpenoids? Discuss their classification. On the basis of isoprene and special isoprene rule, discuss their structures.
3. Define Alkaloids. Discuss their classification. Write the structures of coniine, nicotine, atropine and adrenaline. Identify the group of their classification.
4. Write the structure of cholesterol indicating the position of the hydroxyl group, double bond, side chain and position of the angular methyl groups.
5. Write the structure of ergo sterol? How is it converted into ergocalciferol? Write the chemistry of the process.
6. What are Bile acids? What is the function of bile acids in human body?
7. What are sex hormones? Giving one example of each case write their types along with their structures.
8. With suitable examples discuss isoprene rule and special isoprene rule. Also discuss the exceptions of these rules, if any.
9. What are Alkaloids? How are they extracted from plants? Discuss their general properties.
10. Write the structure of an Alkaloid which also acts as a hormone. What are its physiological actions?