

Tests Of Carbohydrates, Fats & Proteins In Pure Samples & Detection Of Their Presence In Given Food Stuff's Viva Questions With Answers

Question.1. What are carbohydrates?

Answer. Carbohydrates are polyhydroxy aldehydes or polyhydroxy ketones or the compounds which yield these on hydrolysis. .

Question.2. Give two examples of monosaccharides.

Answer. Glucose and fructose.

Question.3. Give two examples of disaccharides.

Answer. Sucrose and maltose.

Question.4. What is Tollen's reagent?

Answer. A solution prepared by adding NaOH solution to AgNO_3 solution and then adding NH_4OH to dissolve the ppt.

Question.5. What are the functions of carbohydrates?

Answer. 1. To supply energy to the body as bio fuel and to act as storage of chemical energy in the form of glycogen in liver.
2. As constituent of cell membranes.

Question.6. Why do we get a red ppt. in Fehling's test?

Answer. Because of the formation of cuprous oxide (Cu_2O).

Question.7. Why do we get a shining mirror in Tollen's test?

Answer. Due to the formation of silver which deposits on the walls of test-tube.

Question.8. What is Molisch's reagent?

Answer. Alcoholic solution of α -naphthol.

Question.9. What is purple ring formed due to in Molisch's test?

Answer. Conc. H_2SO_4 converts carbohydrates into furfural or its derivative which then reacts with α -naphthol to form a violet coloured compound.

Question.10. Name some reducing and non-reducing sugars.

Answer. Glucose and fructose are examples of reducing sugar and sucrose is an example of non-reducing sugar.

Question.11. How will you distinguish between sucrose and glucose?

Answer. Glucose, being a reducing sugar, will give silver mirror test positive (Sucrose is a non-reducing sugar).

Question.12. What is the role of tartarate ions in Fehling's reagent?

Answer. It acts as a complexing agent and prevents the precipitation of copper (II) hydroxide.

Question.13. What is the role of citrate ions in Benedict's solution?

Answer. It acts as a complexing agent and prevents the precipitation of copper (II) hydroxide.

Question.14. Explain why does fructose reduce Fehling's solution and Tollen's reagent in spite of the presence of a ketonic group?

Answer. In alkaline medium fructose rearranges to glucose and the two are in equilibrium with each other (Lobry de Bruyn-van Ekenstein rearrangement).

Question.15. What are Fehling A and Fehling B solutions?

Answer. Fehling solution A is copper sulphate solution and Fehling solution B is a mixture of solutions of sodium potassium tartrate and sodium hydroxide.

Question.16. Do all the sugars give Fehling solution test?

Answer. No, only reducing sugars like glucose and fructose give this test.

Question.17. What are proteins?

Answer. Proteins are naturally occurring complex nitrogenous organic substances with high molecular masses. Chemically, they are polypeptides formed by the condensation of alpha-amino acids.

Question.18. What is the colour obtained in Ninhydrin test for proteins?

Answer. Blue.

Question.19. How are proteins affected by heat?

Answer. They undergo coagulation.

Question.20. How are proteins affected by conc. HNO_3 ?

Answer. Turn yellow.

Question.21. What is the name given to the reaction between protein and conc. HNO_3 ?

Answer. Xanthoprotein reaction.

Question.22. What are the final products of hydrolysis of proteins?

Answer. α -Amino acids.

Question.23. What is biuret test for proteins?

Answer. To 2-3 ml of protein solution in a test-tube, add an equal volume of 10% NaOH solution. Mix thoroughly and add a few drops of 0.5% copper sulphate solution. A purple-violet colour is obtained, if protein is present.

Question.24. What are oils and fats?

Answer. Oils and fats are triesters of glycerol with higher fatty acids. They are also called triglycerides.

Question.25. What is the difference between oils and fats?

Answer. Oils are liquids at ordinary temperature. They contain higher proportion of unsaturated acids whereas fats are solids at ordinary temperature and contain higher proportion of saturated acids.

Question.26. Name two tests for testing fats or lipids.

Answer. (i) Solubility test (ii) Acrolein test.