MAYANG ANCHALIK COLLEGE

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1. (a) Ans = Water activity is the partial vapor pressure of water in a solution divided by the standard state partial vapor pressure of water.

(b) Ans = Acid value is the mass of potassium hydroxide in milligrams that is required to neutralize one gram of chemical substances.

(c) Ans = There are 20 different amino acids which make up proteins. each amino acid consists of a central carbon. The central carbon is bonded to an amine group (NH_2), a carboxyl group ($COOH$), a hydrogen atom and an R Group.

(d) Ans = Proteins are made up of chains of amino acids.

(e) Ans = Vitamin K helps in clotting of blood.

2. (a) Ans= The maillard reaction is a chemical reaction between amino acids and reducing sugars that gives browned food its distinctive flavor. Seared steaks, fried dumplings, cookies and other kinds of biscuits, breads, toasted marshmallows, and many other foods undergo this reaction.

you can control the maillard reaction by changing the amount of reducing sugars, and the availability of amino acids. The maillard reaction is known to create a carcinogen called Acrylamide.

(b) Ans= Caramelization is a slow cooking process that occurs when sugar is cooked over low heat, causing a change in both appearance and flavor. Through a process called Pyrolysis, during caramelization, the sugar in a food oxidizes, taking on a brown color and a rich, slightly sweet and nutty flavor. Caramelized food develops a flavor that

goes beyond the one-noted sweetness of sugar. When sugar caramelize, they develop nuttines, bitterness, toastiness, and even a little bit of buttery caraminess.

2. (C) Ans= Retrogradation is a reaction that takes place when the amylose and amylopection chains in cooked, gelatinized starch realign themselves as the cooked starch cools. Amylose crystallization occurs much faster than crystallization of the amylopection.

When starchy foods — rich, pasta, bread dough - are cooked in the presence of water, all those individual granules of starch absorb water and swell up. The amylose and amylopection molecules in the granules, formerly clinging together, relax a bit and come apart, allowing water to seep in among them.

(d) Ans= Enzymes are proteins that help speed up metabolism, or the chemical reactions

in our bodies. They build some substances and break others down. all living things have enzymes. our bodies naturally produce enzymes. But enzymes are also in manufactured product and food.

—An enzyme's name is often derived from its substrate or the chemical reaction it catalyzes, with the word ending in - ase. Example are — Lactase, alcohol dehydrogenase and DNA polymerase.

3. Ans=12 Water - Soluble vitamins. The water-Soluble vitamins include ascorbic acid (vitamin C), thiamin, riboflavin, niacin, vitamin B_6, ~~to~~ folacin, vitamin B_{12}, biotin and pantothenic acid.

The function of these vitamins are follows ——————

(i) Part of an enzyme needed for energy metabolism ——.

(ii) Part of an enzyme needed for Protein metabolism ; helps make red blood cells.

(iii) Part of an enzyme needed for making DNA and new cells, especially red blood cells

(iv) Antioxidant ; Part of an enzyme needed for Protein metabolism ; important for immune System health ; acids in iron absorption.

4. Ans= ~~Rancidity~~ The condition Produced by aerial oxidation of fats and oils in food marked by unpleasant smell and taste is called Rancidity. For example, Potato chips When kept in air for a long time gives unpleasant smell and bad taste. Rancidity can be retarded by keeping food in Refrigerator.

5. Ans= Enzymes are Specialized Proteins that act as catalysts ; they speed up chemical reactions by lowering the activation energy required. An enzyme is a catalyst in cellular reactions.

Different types of enzymes —

(1) Lipase
(2) Protease
(3) Amylase
(4) Hydrolase
(5) Transferase
(6) oxidoreductases
(7) Lyase
(8) Catalase

The enzymes perform a number of function in our bodies. These include-

(1) Enzymes help in Signal transduction. The most common enzyme used in the process includes Protein Kinase that catalyzes the phosphorylation of Proteins.

(2) Enzymes are responsible for the movement of ions across the plasma membrane.

(3) They function to reorganize the internal structure of the cell to regulate cellular activities.

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