FAQs

1:Write notes on Loss of moisture and Loss of stored energy in fruits and vegetables?

Loss of moisture : Loss of moisture leads to rapid shrivelling and loss of crispness. Plant tissue become mushy and eventually inedible, it leads to loss of soluble carbohydrate and reduction in weight. Moisture loss from surface initiates immediately after harvest and continue during storage or transportation period.

Loss of stored energy : Vegetables are living tissues, respiration that occurs during post harvest period require energy. The stored carbohydrates are degraded for the purpose of energy supply.

2: How fruits and vegetables Contaminated by pathogenic bacteria?

Vegetables are exposed to various types of contaminants. They generally contain heterogeneous microflora, total microbial population depends on the field organisms and other bacteria encountered. Hence galaxies of pathogens that form surface microflora of vegetables are, *Salmonella, Aeromonas hydrophila, Listeria monocytogenes.* Association of vegetables with the outbreaks of human Listeriosis is often reported. *L. monocytogenes* have been isolated from cabbage, cucumber, radish, tomatoes, salad vegetables, beans spourt etc.

3: Classification of vegetable according to their Respiration intensity.

Harvested produce continues to respire throughout its postharvest life. During the process of respiration, carbohydrates are broken down to their constituent parts to produce energy to run cellular processes thus keeping the cells and organism alive.In this table we classified according to their Respiration intensity.

Classification of vegetable according to their Respiration intensity.

Class	Respiration intensity 10 c mg co2 /kg/h	Vegetables
Very low	Below 10	onion
low	10- 20	Cucumber, tomato,turnip
Moderate	20-40	Carrot,pepper,celery
High	40-70	Radish, lettuce

4: Contamination of vegetables and pathogenic bacteria:

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5: What are pathogenic bacteria ,how it contaminate and causes diseases.?

Water-borne pathogen contamination in water resources and related diseases are a major water quality concern throughout the world. Coliform bacteria may not cause disease, but can be indicators of pathogenic organisms that cause diseases. The latter could cause intestinal infections, dysentery, hepatitis, typhoid fever, cholera and other illnesses. However, these illnesses are not limited to disease-causing organisms in drinking water. Diseases, Responsible pathogen, Route of exposure, Mode of transmission ... Botulism, Clostridium botulinum bacteria, gastro-intestinal, food/water borne

6: What are two commonly used preservative chemicals ?

Chemical preservatives work either as direct microbial poisons or by reducing the pH to a level of acidity that prevents the growth of microorganisms. A number of food-processing techniques have been developed to prolong the shelf-life of vegetables.

1. **Inorganic preservative**: Salts like sodium chloride, hypochlorite, nitrite, sulphites, boric acid, borates, alkalies, metals like – silver, halogens like chlorine, iodine, H_2O_2, gases like ozone etc.
2. Organic preservative: Lactic acid, citric acid, benzoates, parabenzoates, sorbic acid, acetic acid, propionic acid, sugar, alcohols, spices, wood smoke etc.

3. Sulphites that are commonly used to prevent the browning of fruits and vegetables after they've been peeled, and to prevent fungal spoilage.
4. Benzoate is also used in preservation. It acts as inhibitor for the growth of yeast and moulds.

7:Health benefits from fruits and vegetables:

Nutrients in fruits and vegetables, such as dietary fiber, vitamins, minerals, and phytochemicals, including polyphenols, all provide support for the biological plausibility that fruits and vegetables play a role in health. Fiber is an accepted nutrient and a short-fall nutrient, so public health messages to increase fiber consumption are warranted. Intakes of fruits and vegetables are also widely promoted, both for the content of fiber and other nutrients. Tens of thousands of phytochemicals have been identified, and researchers speculate that there are likely many more they haven't yet discovered in the foods we eat. Flavonoids are the largest, most varied, and most studied group of phytochemicals. In fact, more than 6,000 flavonoids that occur in plant foods have been described by many authors.

8: Write notes on Dietary fiber?

Dietary fiber or roughage is the indigestible portion of food derived from plants. It has two main components: Soluble fiber, which dissolves in water, is readily fermented in the colon into gases and physiologically active byproducts, and can be prebiotic and viscous. Fiber is made up of non-starch polysaccharides, such as cellulose, dextrins, inulin, lignin, chitins, pectins, beta-glucans, waxes and oligosaccharides. There are two broad types of fiber, soluble and insoluble. Whole-wheat flour, wheat bran, nuts, beans and vegetables, such as cauliflower, green beans and potatoes, are good sources of insoluble fiber.

9: What is Carnauba wax

Copernicia prunifera or the carnauba palm or carnaubeira palm is a species of palm tree native to northeastern Brazil. Carnauba wax comes from the carnauba palm, a Brazilian tree formally named Copernicia prunifera. In hot, dry weather, the plant secretes wax to protect the leaves from damage. Advantages of using carnauba wax Sometimes called the "Queen of Wax," carnauba wax has a much harder melting point (78 °C) than other waxes, and is also extremely hard and usually comes in the form of hard yellow-brown flakes. Brazil wax and palm wax, is a

wax of the leaves of the palm Copernicia prunifera, a plant native to and grown only in the northeastern Brazilian states. Combined with things such as tints and dyes, carnauba wax can be used to create an enduring colored polish. Some of the products are: Candies/sweets, chewing gums, chocolates, confectionary sugar, fruit coating, polishing wax (for car, leather, floor, furniture), food packing, can coating, plastic film, matches, medicine/capsules, graphite pencils, paints, cosmetics, bullets coating, bar codes, dry batteries, computer chips, printing ink, carbon paper, toner, dehydrated vegetables, modeling flowers and fruits, dental wax, textile coatings, lubricants, skin care, hair care, shave creams.

10: Write notes on Nisin?

Nisin is an antibiotic and is an accepted preservative in milk and milk products like cheese. Nisin is produced by *Lactococcus lactis*, however, the latest application in food as a preservative is the tender coconut water in cans and sachets. The bacteriocin **nisin** is a natural antimicrobial agent with activity against a wide variety of undesirable food borne (pathogenic) bacteria.

Nisin is a polycyclic antibacterial peptide produced by the bacterium *Lactococcus lactis* that is used as a food preservative.

Formula: $C_{143}H_{230}N_{42}O_{37}S_7$

Nisin is currently recognized as a safe food preservative in approximately 50 countries.

Nisin is the only lantibiotic allowed as a food supplement. In 1969 the FAO/WHO Expert Committee on Food Additives stated nisin to be safe and natural food additive (FAO/WHO, 1969).

11:Mentation in detail about Irradiation as a preservative technology ?

Irradiation is yet another established process with clearly documented safety and efficacy. Its efficacy stems from the fact that it does not increase the temperature of the product; it can be used post packaging. However its application is restricted to only onion, potatoes and cauliflower. This treatment is **used** to **preserve food**, reduce the risk of **food** borne illness, prevent the spread of invasive pests, and delay or eliminate sprouting or ripening. Irradiated **food** does not become radioactive. The **radiation** can be emitted by a radioactive substance or generated electrically.

12: Combined methods for fruits and vegetables preservation?

Increasing consumer demand for fresh quality products is turning processors to the so-called minimally processed products (MP), an attempt to combine freshness with convenience to the point that even the traditional whole, fresh fruit or vegetable is being packaged and marketed in ways formerly reserved for processed products .According to these authors, the widely accepted concept of MP refrigerated fruits involves the idea of living respiring tissues. Because MP refrigerated products can be raw, the cells of the vegetative tissue may be alive and

respiring (as in fruits and vegetables), and biochemical reactions can take place that lead to rapid senescence and/or quality changes. In these products, the primary spoilage mechanisms are microbial growth and physiological and biochemical changes, and in most cases, minimally processed foods are more perishable than the unprocessed raw materials from which they are made.