FAQs

1:Define what is Microbial spoilage?

Microbial spoilage is caused by microorganisms like fungi (moulds, yeasts) and bacteria. They spoil food by growing in it and producing substances that change the colour, texture and odour of the food. Eventually the food will be unfit for human consumption.

Microbial spoilage by moulds and yeasts includes souring of milk, growth of mould on bread and rotting of fruit and vegetables. When microorganisms get access to food, they utilise the nutrients found in it and their numbers rapidly increase. They change the food's flavour and synthesise new compounds that can be harmful to humans. The presence of a bad odour or smell coming from food is an indication that it may be unsafe. But remember that not all unsafe food smells bad

2:Explain why it is important to keep work surfaces clean in food preparation areas.

Work surfaces need to be kept free of dirt and scraps of food, and out of reach of pets, rodents and insects. This is so that possible causes of microbial contamination are removed and food can be placed on the surfaces without danger to its quality.

3:Describe the best way to prepare (a) fruit and (b) meat for immediate eating?.

Fruit should be washed thoroughly in safe water. Meat should be cooked at a temperature greater than 70°C, for as long as it takes to cook the inside properly – this depends on the exact temperature and the size of the meat pieces. It should be eaten as soon as it is cooked, or kept at above 60°C if there is a delay before it is eaten.

4. What are the benefits and risks of vacuum packing foods for storage?

Vacuum packaging machines or vacuum sealers removes air and can extend the storage time of refrigerated, dried and frozen foods. Remember, vacuum packaging is not a substitute for the heat processing of home canned foods or for refrigerator or freezer storage. However, some dangerous bacteria like, *Clostridium botulinum* that causes the deadly botulism poisoning, only grow in oxygen free environments and without the competition of the spoilage bacteria can grow even faster. Unlike spoilage bacteria, disease-causing bacteria do not change the color or appearance of the food. Keep vacuum packaged perishable foods in the refrigerator or freezer. Care must be taken not to contaminate food during the vacuum packaging processextremely clean hands, and clean and sanitized equipment and work surfaces are essential. Thawing food in the refrigerator is also critical.

5:Write in detail about pasteuration?

The most familiar example of the latter situation is **pasteurization**. During the 1860s, the French bacteriologist Louis Pasteur discovered that pathogens in foods could be destroyed by heating those foods to a certain minimum temperature. The process was particularly appealing for the preservation of milk since preserving milk by boiling is not a practical approach. Conventional methods of pasteurization called for the heating of milk to a temperature between 63 and 65°C for a period of about 30 minutes, and then cooling it to room temperature. In a more recent revision of that process, milk can also be **"flash-pasteurized**" by raising its temperature to about 71°C for a minimum of 15 seconds, with equally successful results. A process known as **ultra-high-pasteurization** uses even higher temperatures, of the order of 90–130°C, for periods of a second or more.

6: Mention the different steps involved in Freeze-drying?

Freeze-drying is a method of preservation that makes use of the physical principle known as sublimation, the process by which a solid passes directly to the gaseous phase without first melting. Freeze-drying is a desirable way of preserving food because at low temperatures (commonly around -10° C to -25° C) chemical reactions take place very slowly and pathogens have difficulty surviving. The food to be preserved by this method is first frozen and then placed into a vacuum chamber. Water in the food freezes and then sublimes, leaving the moisture content in the final product of as low as 0.5%.

<u>7:Define the following?</u>

- A. Vacuum drying
- B. Spray drying
- C. Smoking

8: Define Action of enzymes present in the food:

Enzymes are chemical substance found in all plants and animals. The changes in foods during storage can be produced both by enzymes from microorganisms that contaminate the food. A good example is the ripening of banana in which the enzymes present in the fruit lasten the repining process. Beyond a certain stage the enzymes can render the fruits of soft and unfit to eat. If there is a burnished spot in the fruits yeast could grow and produce enzymes which spoils the fruits all enzymes are inactivate by temperature abovev80c.

<u>9:Define what is hot smoking?</u>

Hot smoking is used primarily with fresh or frozen foods, while **cold smoking** is used most often with salted products. The most advantageous conditions for each kind of smoking, such as air velocity, relative humidity, length of exposure, and salt content are now generally understood and applied during the smoking process. Nowadays, many alternative forms of preservation are available that smoking no longer holds the position of importance it once did with ancient peoples. More frequently, the process is used to add interesting and distinctive flavours to foods.

<u>10: Explain in detail what is vacuum drying?</u>

Vacuum drying is a form of preservation in which a food is placed in a large container from which air is removed. Water vapor pressure within the food is greater than that outside of it, and water evaporates more quickly from the food than in a normal atmosphere. Vacuum drying is biologically desirable since some enzymes that cause oxidation of foods become active during normal air drying. These enzymes do not appear to be as active under vacuum drying conditions, however. Two of the special advantages of vacuum drying are that the process is more efficient at removing water from a food product, and it takes place more quickly than air drying.

11: Write in brief about about Oils and spices are used in preservation

Oils and spices are used as preservatives in pickles. mustard powder is one of them. It prevents the growth of micro organisms, thus preventing spoilage, oil is poured to cover the mango, lemon or other vegetables which are being pickled. The oil acts as a protective covers to prevents contact of micro-organisms with the food, and prevents contact of air with food, hence the micro organisms cannot grow and spoil the food.

<u>12:Write notes on Freezing and processing methods?</u></u>

Freezing is an effective form of food preservation because the pathogens that cause food spoilage are killed or do not grow very rapidly at reduced temperatures. The process is less effective in food preservation than are thermal techniques such as boiling because pathogens are more likely to be able to survive cold temperatures than hot temperatures. The rate at which food is frozen is also a factor, primarily because of aesthetic reasons. The more slowly food is frozen, the larger the ice crystals that are formed. Large ice crystals have the tendency to cause rupture of cells and the destruction of texture in meats, fish, vegetables, and fruits. In order to deal with this problem, the technique of quick-freezing has been developed.

<u>13: Define the following?</u>

- A. Fermentation
- B. Spray drying

Fermentation is a naturally occurring chemical reaction by which a natural food is converted into another form by pathogens. It is a process in which food spoils, but results in the formation of an edible product. Perhaps the best example of such a food is cheese. Early humans discovered, however, that the spoilage of milk can be controlled in such a way as to produce a new product, cheese.

Spray Drying

Spray drying is the process during which concentrated solution of coffee in water is sprayed through a disk with many small holes in it. The surface area of the original coffee grounds is increased many times, making dehydration of the dry product much more efficient

<u>14: Write what is pasteurization and different processing techniques?</u></u>

The most familiar example of the latter situation is **pasteurization**. During the 1860s, the French bacteriologist Louis Pasteur discovered that pathogens in foods could be destroyed by heating those foods to a certain minimum temperature. The process was particularly appealing for the preservation of milk since preserving milk by boiling is not a practical approach. Conventional methods of pasteurization called for the heating

of milk to a temperature between 63 and 65°C for a period of about 30 minutes, and then cooling it to room temperature. In a more recent revision of that process, milk can also be **"flash-pasteurized**" by raising its temperature to about 71°C for a minimum of 15 seconds, with equally successful results. A process known as **ultra-high-pasteurization** uses even higher temperatures, of the order of 90–130°C, for periods of a second or more

15:Define the general methods of food preservation?

The following are the general methods of food preservation:

- application of heat, such as canning and preserving, pasteurization, evaporation, sun-drying, dehydration and smoking,
- application of cold, as ill cold storage, refrigeration and freezing,
- the use of chemical substances such as salt, sugar, vinegar, benzoic and lactic acids,
- fermentation, examples being acetic, lactic, alcoholic, etc.,
- such mechanical means as vacuum, filtration and clarification processes, devices or agents for preventing chemical deterioration or bacteriological spoilage (the use of oil, paraffin and water glass are included here),
- Combinations of two or more of the above.