

FOOD PROCESSING AND TECHNOLOGY

STUDY NOTES

- **Food science** is a field which involves application of science, i.e., chemistry and physics, culinary art, agronomics and microbiology.
- Earlier food was process to improve the digestibility palatability and continuous supply.
- Example of preserved food pickles and murabba.
- Indian food industry produces processed food in a very huge size which nearly contributes to 6% of GDP.
- **Food processing** is the method and technique used to transform raw ingredient into finished and semi finished food products.
- On 14th January 2010 Government of India announced the setting of mega food processing to boost the food processing industry.
- **Food fortification** is addition of nutrient which is lacking in the food to ensure dietary requirement are met.
- Example of food fortification are vitamin A added to oil and folic acid to flour.
- Calorie content in processed food are reducing by using artificial sweetener.
- **Food technology** is the science and application of scientific knowledge and rules for the production of food at a larger scale. Food technology gives knowledge of science and technology and develops skills for selection, storage, preservation, processing, packaging and distribution of nutritious food.
- **Food manufacturing** is the mass production of products using food technology to fulfill the need of population.
- In 1810 development of canning process by **Nicholas Appert** was decisive event.
- Louis Pasteur did research on spoilage of wine and production of alcohol and souring of milk.
- **Pasteurization** is the process of treating milk to destroyed disease.
- Pasteurization was first step to ensure microbiological safety of food.
- Initially food technology was used to serve military need. Then product such as instant soup and ready to cook food were developed specially for working women.
- **Professionals of food processing** are required to be knowledgeable about characteristics of raw food material, principles of food preservation and other factors which influence quality form of packaging and manufacturing process.
- Foods can be destroyed by physically, chemically and biologically. Food deterioration means spoilage development of bad flavor, poor texture, discoloration and loss of nutritional value.
- Food it can be destroyed by pest, insect and inappropriate temperature used for processing and storage, oxygen and moisture.
- To stop the **spoilage of food** processing and preservation are required to form the safe food. The oldest method were sun drying, fermentation, smoking, baking and using spices as preservative.
- **Food classification** on perishability is of three types. Perishable foods spoil quickly like milk, semi perishable foods last for 1 to 2 week like fruits in vegetable, non perishable are those food that last for 1 year example rice and wheat.
- **Bacteria** always prefer protein rich food like meat, fish, egg and dairy product these are high risk food.

- **Bacteria** grow at 5 to 60 degree Celsius and this temperature range is also known as danger zone.
- **Methods to prevent foods** spoilage are application of heat, removal of moisture, lowering of temperature, reduction of PH and controlling the oxygen.
- **Minimal process food** are cleaning, trimming, and cutting at low temperature.
- Preserved foods uses the method of preservation without changing the character of product.
- **Manufactured foods** are the food with lost original characteristics and method of preservation are used. Example pickles and jam
- **Formulated food** are the product prepared by mixing and processing of individual ingredient to result stable food product such as bread and biscuit.
- **Food derivatives** are the food obtained from raw product through purification like sugar from sugarcane.
- **Functional food** are food that has beneficial effect on human body.
- **Medical food** are used in the disease for example low sodium salt.
- After completion of 12th examination Persian can pursue short term certificate diploma courses for self employment and placement in unit of food preservation.
- **Food technology** can work in food industries quality control department, hotel, labelling and packaging industries, drink industries, dairy, confectionery, fruits and vegetable processing etc.

QUESTION BANK

MULTIPLE CHOICE QUESTIONS

- Bacteria multiply quickly in food temperature which is danger zone. What is the temperature of danger zone?
 (a) 5 – 60°C (b) 2 – 30°C (c) 6 – 70°C (d) 8 – 80°C
- The set of methods and techniques used to transform raw ingredient into semi-finished or finished products is called
 (a) Food science (b) Food technology (c) Food processing (d) Food manufacturing
- _____ is the mass production of products using food technology to fulfill the need of population.
 (a) Food technology (b) Food manufacturing (c) Food science (d) Food processing
- Which of the following is the oldest method of food preservation?
 (a) Sun drying (b) Use of preservative
 (c) Adding colours (d) Store in refrigerator
- Which principle of food preservation is involved in sun drying?
 (a) Reduction of pH (b) Removal of water
 (c) Lowering of temperature (d) Cut-off the oxygen
- _____ gives knowledge of science and technology and develops skills for convenient food.
 (a) Food science (b) Food technology (c) Food manufacturing (d) All of these
- Canning process was developed by
 (a) Nicolas Appert (b) Louis Pasteur (c) Amartya Sen (d) Nicolas Henry
- Research on spoilage of wineband souring of milk was conducted by
 (a) Nicolas Appeet (b) Louis Pasteur (c) Amartya Sen (d) Nicolas Henry
- The process of treating milk to destroyed disease producing organism is called as
 (a) Pasteurization (b) Canning
 (c) Food processing (d) Fortification
- Food technology was initially used to fulfill the need of _____
 (a) Citizen (b) Working class (c) Military (d) Doctors

11. Food deterioration includes following characteristics
 - (a) De-colouration
 - (b) Loss of nutritional value
 - (c) Development of off flavour
 - (d) All of the above
12. Milk comes under which type of perishability?
 - (a) Perishable food
 - (b) Semi perishable food
 - (c) Non-perishable
 - (d) None of these
13. Potato is an example of
 - (a) Semi-perishable
 - (b) Non-perishable
 - (c) Perishable
 - (d) All of these
14. _____ are foods that last for 1 year.
 - (a) Semi-perishables
 - (b) Non-perishables
 - (c) Perishables
 - (d) All of these
15. Bacteria, fungi, and yeast cause food spoilage. This is principle of
 - (a) Insect
 - (b) Virus
 - (c) Microorganism
 - (d) Protozoa
16. Foods spoilage can be prevented by
 - (a) Application of heat
 - (b) Lowering the temperature
 - (c) Removal of water moisture
 - (d) All of these
17. Bacteria prefer _____ rich foods
 - (a) Protein
 - (b) Carbohydrate
 - (c) Fats
 - (d) Sugar
18. _____ are processed little to return the quality of fresh foods.
 - (a) Preserved food
 - (b) Manufactured food
 - (c) Minimal processed food
 - (d) Formulated food
19. Dehydrated vegetables and canned fruits vegetables come under which type of processing?
 - (a) Formulated food
 - (b) Preserved food
 - (c) Medical food
 - (d) Functional food
20. Foods which can have a beneficial effect on human health like probiotic are called as
 - (a) Functional food
 - (b) Medical food
 - (c) Food derivatives
 - (d) Minimal process food
21. What is full form of CFTRI?
 - (a) Central Food Technological Innovation
 - (b) Central Food Terminology Inventions
 - (c) City Food Technological Institute
 - (d) Central Food Technological Institute
22. Which is the wrong method to increase the shelf life?
 - (a) Dried
 - (b) Add preservatives
 - (c) Addition of colours
 - (d) Frozen
23. Step taken by Government of India for boosting the food processing industry includes:
 - (a) Use of preservatives
 - (b) Setting up of mega food processing park
 - (c) Food fortification
 - (d) Food supplementation
24. _____ ensures microbiological safety of food.
 - (a) Pasteurisation
 - (b) Food technology
 - (c) Food manufacturing
 - (d) Canning
25. In which century, World War, exploration of space and rising demand of food products contributed to the growth of food technology?
 - (a) 18
 - (b) 19
 - (c) 20
 - (d) 21
26. Which of the following is the method of food preservation from spoilage?
 - (a) Roasting
 - (b) Baking
 - (c) Candying
 - (d) All of these
27. _____ foods last for one year
 - (a) Non-perishable
 - (b) Perishable
 - (c) Semi-perishable
 - (d) All of these
28. _____ in fresh boots and vegetable use oxygen to metabolise, and reducing of shelf life.
 - (a) Oxidative enzyme
 - (b) Yeast
 - (c) Insects
 - (d) Bacteria
29. Which of the following is high risk food?
 - (a) Chapati
 - (b) Pulses
 - (c) Dairy products
 - (d) Vegetables

30. The process of conversion of oil to *Vanaspati* is known as
 (a) Canning (b) Purification (c) Hydrogenation (d) Fortification
31. Bread, biscuits and ice cream are examples of
 (a) Manufactured food (b) Formulated food (c) Food derivatives (d) Preserved food
32. The field of work amongst the following is incorrect career avenue after having education in food technology:
 (a) Production management (b) Quality assurance
 (c) Research and product development (d) Trading partner
33. Professional in field of food manufacturing and technology must require knowledge and skills of
 (a) Products specification and food product development
 (b) Ebenezer to use information technology for product designing
 (c) Food ingredients and their uses
 (d) All of the above
34. What is added to oil and fats?
 (a) Calcium (b) Vitamin A (c) Protein (d) Folic acid
35. In which year, canning process was decisive event?
 (a) 1810 (b) 1811 (c) 1812 (d) 1813
36. Which of the following is not preserved food?
 (a) Frozen vegetable (b) Dehydrated peas
 (c) Canned fruits and vegetables (d) Pickles
37. What is AGMARK?
 (a) Institute for agriculture products (b) Standard for agriculture food product
 (c) Food item (d) None of these
38. _____ is added to flour in food fortification.
 (a) Folic acid (b) Vitamin A (c) Iodine (d) Iron
39. What is the advantage of food processing?
 (a) Availability of food throughout the year (b) Add extra nutrients to food item
 (c) Removal of toxin (d) All of the above
40. Who is known as the father of food processing?
 (a) Nicholas Appert (b) Louis Pasteur (c) William Wood (d) Thomas
41. In dry freezing process food are the rapidly snowed by:
 (a) Liquid nitrogen (b) Liquid oxygen (c) Liquid hydrogen (d) Liquid carbon dioxide
42. The red colour of Apple is due to which pigment?
 (a) Caricazanthine (b) Anthocyanin (c) Carotenoids (d) Capsanthin
43. Amount of oil in pickle is always high because
 (a) It is common tradition (b) To prevent air explosion
 (c) To improve taste (d) All of the above

Input Text Based MCQs

Read the passage and answer the questions that follow (44 to 49).

India has progressed from agro-deficit to agro-surplus country which created storage and processing of agricultural products. Indian food industries are producer of processed food and rank 50 in terms of size. Changes in lifestyle call my increasing mobility and utilisation have increased the demand of products. Also consumer perception about food has changed due to rapidly changing in their lifestyles which increase the importance of food processing and technology. Food preferences and choices changed also people incorporating into their diet food from different countries. The desire

to have seasonal food all-year-round increase which enhanced the food technology to provide more safer and fresher foods using new technology.

- 44. Ready to cook the food is more helpful for
(a) Working women (b) Working men (c) Children (d) All of these
- 45. Food technology is helpful for providing food products all time in a year.
(a) True (b) False (c) Can't say (d) None of these
- 46. Food technology has provided varieties of _____ and _____ food.
(a) New, spicy (b) Safe, convenient (c) Healthy, sweet (d) Fast food, junk
- 47. Development of food products are on _____ level.
(a) 2 (b) 1 (c) 3 (d) 4
- 48. The main objective of food processing and technology is to increase the _____ of food.
(a) Shelf life (b) Quantity (c) Demand (d) Quality
- 49. Food technology is a branch of _____.
(a) Food manufacturing (b) Food science (c) Food art (d) All of these

ANSWERS

Multiple Choice Questions

- 1. (a) 2. (c) 3. (b) 4. (a) 5. (b) 6. (b) 7. (a) 8. (b) 9. (a) 10. (c)
- 11. (?) 12. (a) 13. (a) 14. (b) 15. (c) 16. (?) 17. (a) 18. (c) 19. (b) 20. (a)
- 21. (d) 22. (c) 23. (b) 24. (a) 25. (c) 26. (d) 27. (a) 28. (a) 29. (c) 30. (c)
- 31. (b) 32. (d) 33. (d) 34. (b) 35. (a) 36. (d) 37. (b) 38. (a) 39. (d) 40. (a)
- 41. (a) 42. (b) 43. (b)

Input Text Based MCQs

- 44. (d) 45. (a) 46. (b) 47. (c) 48. (a) 49. (b)

