MIDSEM QUESTIONS

1. Provide the name of any mushroom that is cultivated in Ghana.
-Agaricus ostreatus
-Oyster mushroom (Pleurotus ostreatus)
-Straw mushroom (Volvariella volvacea)

2. i. Define minimum cooking temperature and explain the possible hazards that may be associated with undercooked egg, meat and fish.
It is the minimum temperature of cooking a food which renders it safe and without it losing its nutritional value.

ii. Why do different products have different required cooking temperatures?

- Because these foods may contain proteins which differ in type and composition.

Different proteins denature at different temperatures; most proteins in food denature in the range of 120–160°F / 49–71°C. Egg whites, for example, begin to denature at 141°F / 61°C and turn white because the shape of the denatured protein is no longer transparent to visible light. In meat, the protein myosin begins to denature around 122°F / 50°C; another protein, actin, begins to denature around 150°F / 65.5°C.

- Because different products have different pH and different associated microorganisms with different or varying heat resistance

3. What role does fermentation play in both cocoa and coffee production?
It imparts flavor and color

4. During canning, acidic foods require less amount of heat treatment than neutral. Explain.

- Because acidic are low hin pH and this helps to control the growth and survival of microbes. Hence heat is not needed much
- Because the potential presence of spore formers like clostridium would have been eliminated due to the acidity levels

5. State any 5 helminthes that may compromise food safety.

- Trichinella nativa,
- Trichinella spiralis
- Taenia solium-pork
- Taenia asiatica- pork
- Taenia saginata
- Cestodes/Tapeworms
- Nematodes
- Moniezia expansa (sheep)
- Haemonchus contortus (and goat)

6. Describe the effect of any 2 mentioned above and how the can be treated

- Trichinella nativa

Causes- Trichinelosis which is characterized by Nausea, vomiting, cardiac complications, and may even be fatal
Treatment- Mebendazole, Albendazole (for non capsulated forms) or by cooking at a temperature above 71C.

- Taenia solium

Effects- adult onset seizures, affects brain and muscles
Treatment- Albendazole, Cortecosteroids

7. i. What is rigor mortis?
Rigor mortis refers to stiffening of the joints and muscles of a body a few hours after death, usually lasting from one to four days.

ii. Has it any effect on meat quality and safety?
Yes.

8. i. Differentiate between food safety and food security
Food safety is concerned with all safe sources of food such as freedom from microbial contaminations unwanted chemicals etc. and involves the use of HACCP while food security refers to the availability, accessibility or abundance of food

ii. The two keys in ensuring food safety are....
- Safe handling of food
- Personal hygiene

9. i. Explain the term "cross-contamination" and state the various types.
*Transfer of microbes unintentionally from one source to another with harmful effects

ii. A hazard is....
A hazard is any biological, chemical or physical property, or substance, that has the tendency of causing danger or rendering a food unsafe for consumption.

10. Contamination refers to....
Transfer of harmful microorganisms on to high-risk food. High risk food refers to processed foods(cooked/uncooked) to make it safe and that won't need any more processing before its eaten.

11. i. What are mycotoxins?
Toxins produced by fungi

ii. List any 2 above and their effects on the food industry
Aflatoxin: Diseases in humans eg. Aflatoxicosis

Ochratoxin : contaminates crops in the field like peanut etc

12. i. What are food allergens?
These are foods that elicit an allergic response when taken

ii. An allergic reaction is...
A hypersensitive response or reaction of the body to an substance that is considered antigenic and that elicits the production of antibodies

iii. List 5 common food allergens
Fish, peanuts, milk, eggs, sea foods, soybeans,
Cereals containing gluten; i.e., wheat, rye, barley, oats,

13. Why are allergens and food borne intolerance not considered as food-borne diseases?
- Because they are not caused by pathogens or toxins but rather by the body's own immune system.
- No pathogens are involved. The body is simply misinformed to the actual nature of food and activates a histamine response or has difficulty in digesting the food, respectively

14. Explain and give example of each of a food borne disease that would be described as

a) Mild- These diseases sometimes need no treatment. Most infected persons recover with no tissue damage. Eg. Hepatitis A
b) Self-limiting- Self limiting food borne diseases are caused by viruses and they require a living host in order to function. Eg. botulism caused by C . botulinum
c) Life-threatening- Life threatening refers to food borne illnesses that needs immediate medical attention due to its severity and can cause death if left untreated. Eg. Cholera and typhoid

15. i. Define the term starter culture.
Starter cultures consist of microorganisms in a medium used to start fermentation in a fresh new medium and which aid in the production of food products like wine, cheese, koumiss, vinegar, wine, kenkey, etc

ii. Outline the reasons for starter cultures may be employed and its importance.
Importance

- It assists the beginning of the fermentation process in the preparation of various foods and fermented drinks.
- They are used by fermented food industry.
- Starter culture is used in the production of sourdough, dairy products like cheese and yoghurt and also vinegar.
- It adds flavor, aroma and alcohol production
- It aids in proteolytic and lipolytic activities
- It helps in the inhibition of undesirable organisms

16. i. Define Solid state Fermentation.
Solid state fermentation (SSF) is a fermentation process occurring in the absence or near –absence of water.

ii. Name 2 products formed by solid state fermentation
Cassava, barley, wheat bran, rice bran, sugarcane bagasse.

17. i. State the raw materials for the preparation of sufu and soy sauce
Wheat, Soybeans, Salt and Water

ii. Why are viruses not considered important in food spoilage?

- They do not alter the integrity of the food since they don't break down the complex food compounds into simpler ones which rather spoil more easily.
- Because they do not multiply in food but are passed on from food to another person

18. i. State two features of microorganisms that may potentially be used as probiotics
1. Non-pathogenic and non- toxic
2. Able to produce large number of viable cells
3. Should be able to survive in the gut
4. Should be beneficial to the host

ii. State the part of the body where these microorganisms reside
Colon

iii. Define prebiotics and state the features which makes a substance suitable as a prebiotic
Prebiotics are food ingredients/ compounds that stimulates the growth and activities of beneficial microbes

1. Neither hydrolysed nor absorbed by the upper part of GIT
2. Be a selective substrate to one of limited number of beneficial microbes
3. Be a able to alter the micro flora in the colon towards a healthier composition

19. Yeast and Lactic Acid Bacteria are undoubtedly the most used microorganisms in the food industry
i. State an instance where the two have collaborated in a product development.
African bear, kefir, soy sauce

ii. State an instance where yeast is desired whereas Lactic Acid Bacteria is a nuisance.
Bread, wine, most European beers

iii. State an instance where Lactic Acid Bacteria is desired whereas yeast is a nuisance.
Yoghurt, cheese, salami

20. i. Describe all 3 categories of food borne diseases
ii. Foodborne disease outbreak refers to.....
Food borne disease outbreak refers the situation where there are 2 or more cases of a similar illness resulting from the ingestion of a common food

iii. What is personal hygiene?
Personal hygiene involves those practices performed by an individual to care for one's bodily health and well being, through cleanliness.

iv. List the steps involved in proper handwashing.
1. *Wet your hands with clean, running water and apply soap.*
2. *Lather your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your nails.*
3. *Scrub your hands for at least 20 seconds.*
4. *Rinse your hands well under clean, running water.*
5. *Dry your hands using a clean towel or air dry them*

iv. What is the single greatest threat to food safety
Bacteria

v. What is a handwashing station?
Hand washing station is a portable sink that provides free flowing water and consists of a liquid soap in a dispenser a paper towel and a container for waste water

vi. State the importance of handwashing
To reduce bacterial load

vii. State 8 instances that require handwashing.
Before eating
After eating
Before handling and packaging food
After handling and packaging food
After visiting the toilet
Before cooking, etc.

viii. Why are children and the aged prone to foodborne diseases?
Due to their generally weak immune systems, small quantities of microbes are sufficient to cause the disease

ix. Which would be more lethal; blast freezing or slow freezing?
Slow freezing, because the process is slow, it encourages the growth and activity of microbes to a certain point.

21. Why would you critique a client who buys insulin kept at room temperature?
Insulin has protein bonds that when subjected to room temperature, bacteria may act on it and break the bonds thereby denature and degrade its quality and efficiency.

22. Name any 2 non-microbial toxins and their specific effects

- Plant toxins- they affect the gastrointestinal tract by causing gastroenteritis
- Animal toxins-they affect the skin by causing dermatitis

23. State 2 importance each of algae and mould in the food industry

- Algae

• Algae are used for a direct source of food in all parts of the world especially in Asia. The most commonly consumed macro algae include the red algae Porphyra, Asparagopsis taxiformis, Gracilaria.

• In food production carrageenan extracted from the red seaweed (Porphyra) are used as a thickening agent in foods like pudding, chocolate milk and chewing gum.

• Algae are used for feeding livestock and hens. Seaweeds are important sources of iodine.

• Algae are cultivated around the world and are used as human food supplement. They provide many vitamins including A, B, B2, B6, and the like. Chlorella used to reduce mercury levels in humans.

- Moulds

Cheese making
Bread making

24. No Question

25. i. List any 3 groups of organism that are used for the production of single cell proteins

- Bacteria- Lactobacillus
- Fungi- Aspergillus Niger & fumigatus
- Yeast- Saccharomyces cerevisae
- Algae- Spirulla spp

ii. Why is single cell proteins not popular in spite of its huge benefits?

Because it is;

- -Non digestible
- -Expensive
- -Allergies
- -unpleasant odor/color

26. State the 2 main stages involved in vinegar production and the starter organism used at each stage.

- Anaerobic Conversion of Sugars to ethanol by Yeast (saccharomyces cereveciae)
- Aerobic oxidation of ethanol oo acetic acid by Acetobacter sp

27. Mention 3 uses of vinegar

- It is used in the preservation of food.
- It is used in flavoring food eg. Salad
- It is used as a cleaning agent.
- Antimicrobial; inhibits the growth of several common foodborne pathogens which are sensitive to acidity. e.g. staphylococcus

28. Distinguish between beer and wine

- Wine can be alcoholic or non alcoholic but beer is always alcoholic
- Wine is from fruits (grapes) and bear is from cereals (mostly barley)

29. How and where should a raw material be thawed in a refrigerator?

Remove it from the freezer and put it in the fridge.
The refrigerator consists of freezer and fridge portions.

The temperature of the freezer is about 0 degrees and that of the fridge is about 4 degrees. The temperature danger zone, which is the temperature at which microbial growth is faster is 5 degrees to 63 degrees. To avoid microbial contamination, thawing is done by removing the material from the freezer to the fridge whose temperature is out of the temperature danger zone and also above the freezer temperature. This way food is safer.

30. What are the five major risk factors that contribute to food borne disease outbreak?

- Food held at improper temperature
- Inadequately cooked or undercooked foods
- Contaminated food equipment
- Food from an unsafe source
- Poor hygienic practices

31. Apart from ash, immersion in water and burial in soil, state any five methods of traditional food preservation

Drying, Pickling, salting, fermenting, smoking

32. For all the 8 traditional methods above, state the factors influencing growth or survival.

- Drying — reduction of water content inhibits growth of microbes
- Smoking - chemical preservatives from smoke and heat from smoke
- Salting - mechanism of osmosis
- Fermentation; use of microbes to breakdown carbohydrates to release energy consequently imparting flavor, color and extending shelf life of food.
- Pickling ; storing food with brine or vinegar
- Immersion in water-based the water serves as a form of barrier to filter high densities of microbes
- Burial in soil- reduces surface area to the activity of certain kimds of microbes and keeps food in conducive environment thereby reducing spoilage and extending shelf life
- Ash- Increases pH and reduces surface area to microbes

33. What kinds of food require labelling?

- Prepackaged foods
- Processed foods

34. An excellent label must have.....

- The name of the food
- Date of manufacturer
- Expiry date
- Best before date
- List of ingredients (and their quantities)
- Net content and dry weight
- Name and address of manufacturer, packager, importer, exporter, vendor of the food
- Country of origin
- Batch number/Lot identification
- Date marking and storage instruction/conditions
- Instructions of use
- Barcode

35. What is the importance of Barcoding?

Barcodes provide a method to track and store information about goods, from individual items to large stocks of thousands or even millions of items.

36. Briefly described the mechanisms involved in the following food preservation methods

i. Ohmic heating

It is the passage of alternating current through food material for heating where heat is internally generated in the material due to electrical resistance when electric current is passed through it.

ii. Hydrostatic
Subjecting foods previously scaled in flexible and water resistant packaging to a high level of hydrostatic pressure (pressure transmitted by water) up to 600MPa for sometime

iii. Ultrasound
Use of high frequency sound waves to preserve food products. Ultrasound is similar to sound waves but has frequency that cannot be detected by the human ear.

37. Which groups of microbes are:
a) most susceptible to each of the methods stated above
Hydrostatic- Gram negative bacteria
Ultrasound- Gram negative bacteria
Ohmic- Salmonella, E. Coli

b) most resistant to each of the methods stated above
Hydrostatic- Gram positive
Ultrasound- Gram positive, sporeformers(C. botulinum), S. aureus
Ohmic- Foods containing fatty acids

38. For each of the methods above, state one item for which it may be effective
Hydrostatic- canned foods
Ultrasound- Egg
Ohmic- fruits and vegetables, eggs

39. State one drawback of using each of the methods stated above
- Ohmic- cost of electricity and lack of suitable electrode material
- Hydrostatic- needs water inside of the food product for its homogeneous, uniform, efficient transmission and consequently to cause an inactivation of the microorganisms present in the product.
- Ultrasound- High resistance of bacteria and enzymes

40. State the 7 principles involved in HACCP sequentially
i. *Conduct a hazard analysis test*
ii. *Determine the critical control points*
iii. *Establish critical control limits*
iv. *Establish monitoring procedures*
v. *Establish corrective procedures*
vi. *Establish verification procedures.*
vii. *Establish record keeping and documentation procedures*

41. i. Classify the following either as sanitizing or cleaning agents- ***detergents, degreasers, acid cleaners, abrasives, chlorine, iodine, quaternary ammonium compounds***
Cleaning agents: Abrasives, detergents, degreasers, acid cleaners.

Sanitizers: chlorine, iodine, quaternary ammonium compounds

Differentiate between
ii. Sanitizing/cleaning
Cleaning removes dirts,germs and impurities from the surface of an object whiles Sanitizing means the surface of an object has a reduction of pathogens though there may be microorganisms present, they are at a safe level

iii. Garbage/refuse

- Waste products from the kitchen while refuse is waste products in general.
- Rubbish-Dry, combustible or noncombustible things that you dispose of
  Garbage-Wet or organic waste from your kitchen and bathroom

- Rubbish-Things that slowly decompose
  Garbage-Things that rapidly decompose

- Garbage- is the refuse which comes mainly from the bathroom and kitchen. It is basically organic waste, clothing, food waste, food containers, paper products etc.
  Rubbish- is the waste which comes from anywhere but the bathroom and kitchen. It could be old furniture, leaves, twigs, grass clippings, junk and other products which might come under the category of hazardous household waste.

42. i. Pickling refers to....
Storing food in vinegar

ii. State one advantage and disadvantage of pickling

- Advantage- preservation of vegetables
- Disadvantage- alters the original taste and flavour of foods

ii. The objective of pickling is.....
*To create a low pH to hinder the growth of microbes

43. Distinguish between single and pure culture

- Pure culture involves only a single species of organisms while the single culture involves a single strain of organism or bacteria
- *Pure culture-using one kind or species of microbes while single culture refers to the culture of different similar strains of microbes

44. What processing method is used in making African locust bean edible?
Boiling and Dehulling

45. Mention the raw material for palm wine production
Plant sap from Palm tree

46. Critique the following
i. A person using car engine oil to lubricate a blender
Engine oil is not a food graded substance and remnants left in the blender can cause harm to people

ii. A person placing raw meat over a ready to eat food in a fridge
It would result in cross contamination

iii. Thawing a food substance at room temperature
It may increase microbial load in that, the food is exposed to the the atmosphere and microbes present. This will eventually lead to contamination.

iv. A person who bought a product whose can is dented
A dent can create holes and these holes will cause subsequent exposure to microbes which may result in spoilage or contamination

47. Give an overview of your group's seminar presentation limiting yourself to membership, title, introduction and conclusion

CLASS PAGE QUESTIONS

1. **What is HACCP**
   Hazard analysis critical control point is a management system in which food safety is addressed through the analysis and control of all forms of hazards from raw material production, procurement and handling, to manufacturing and distribution to consumption of the finished product.

2. **What is Hand washing**?
   Hand washing (or handwashing), also known as hand hygiene, is the act of cleaning hands for the purpose of removing soil, dirt, and microorganisms

3. **Hand washing day**?
   Hand washing day 15th October

   Global Handwashing Day 2018, Theme: Clean hands -a recipe of life.

   World health day 7th April

4. **World toilet day is on** ?
   19th November
   World Toilet Day 2018, Theme: : "when nature calls

5. **Aim of observing hand washing day**?
   Foster and support a general culture of handwashing with soap in all societies
   Shine a spotlight on the state of handwashing in each country
   Raise awareness about the benefits of handwashing with soap.

6. **How is food arranged in the fridge**?
   - Upper shelf - food that do not need cooking like leftovers
   - Middle shelf - diary such as milk, yoghurt and chews
   - Bottom shelf - raw meat and fish
   - Drawers - vegetables and fruits
   - Door shelves - jams and juices
   - Cooked food should always be above raw foods to avoid cross contamination

7. **Difference between freezing and chilling**
   - The difference is in the temperature. Chilling is just reducing the temperatures but freezing is reducing the temperatures below the substance's freezing point
   - Also Chilling is near but above the freezing point of the food commodity *whiles* Freezing is the storage of food commodity in a frozen condition

8. **How many liters of milk is poked out of a health cow in a day**
   42pints or 24.5 liters
   For dairy cows..... Milk production is dependent on lactation, time of day etc etc... This is just an average

9. **Difference between food borne intoxication and food borne infection**??
    - Food borne intoxication is caused by eating a food containing a toxin
    - Food borne infection is caused by live pathogenic microorganisms

10. **Sugar bread, butter bread and wheat bread. Which one spoils faster and why**?
- Sugar is itself a preservative so it's between the other 2
- Brown bread has less preservatives

The 4 elements that determine rate of mould spoilage in bread

i. Moisture
ii. Acidity levels
iii. Climate- warm, dark places
iv. Preservatives such as salt

The ingredients used to make the bread will help you determine which will spoil first
Sugar is a preservative, thus sugar bread should last longer than butter bread

11. **What advantage does the old ways of preserving foods have over the new ways**?
The old method does not diminish the sensory appeal of the fermented products

12. **Why does fish spoil faster than meat**
    - The saturated fats also have single or double bonds but generally those of fish are chemically more reactive than those meat.
    - Fish has lower residues of glucose than meat.

13. **Why are low acid foods heated at a higher temperature than high acid foods?**
- Because of Clostridium Botulism not being able to cause spoilage in high acid foods but being potent in low acid foods.
- Low acid foods are pasturised to a temperature called Botulism Cook. For high acid foods, the low pH does not favour growth of clostridium botulism
    a. Highly acidic: lower temperature
    b. Low acidity : higher temperatures

14. **Difference between cold shock, cold injury and freezer burn**

Cold Shock: Is a physiological response of organisms to sudden cold especially cold water

i. Phenomenon where there organism responds to extreme cold conditions

Cold Injury: An injury caused by exposure to extreme cold that can even lead to loss of body parts

ii. A result of cold shock where the low temperature results in the breakdown of tissues

Freezer Burn: A condition that arises in frozen foods where Surface discoloration occur due to sublimation of water from the product.

15. **Sun-dried 'kokonte' and the oven-dried, which lasts longer?**
- Sun dried. The sun rays are much more effective in reducing the microflora in the kokonte than that from the oven since sun rays contain UV rays
- Higher microbial activity increases digestibility. When digestibility is improved, it becomes more nutritious since the compound is broken down to simpler forms.
- Cassava has high cyanide levels. Fermentation reduces the cyanide to less harmful thiocyanide decreasing its toxicity.

16. **What are the steps in yoghurt production?**
- **Adjustment of milk composition**: this is done depending on the type of yoghurt you want to produce either high, low or no fats.
- **Pasteurization**(85°C for 30min): reduce the number of microorganisms present, to create a conducive environment for the starter cultures to function and to denature the whey

- **Homogenization**: To improve the texture, stability and make the products whiter.
- **Cool to 42°C:** To create a good temperature growth for the starter cultures.
- **Inoculation of starter culture**: fermentation of lactose to lactic acid which act on milk protein to clot.
- **Hold and cool to 7°C**: To stop the fermentation process in other to prevent the yoghurt from becoming solid.
- **Addition of flavor and fruits**
- **Packaging**

17. **Why homogenize during yoghurt production?**
    The primary reason for homogenization is to prevent the fat content from separating out to form a cream layer on top when left to stand.

18. **Difference between spoilage and fermentation**?
    Fermentation sometimes imparts flavor while spoilage produces bad taste and off-odours

    Fermentation plays a role in preserving certain foods like Kimchi and sauerkraut while spoilage plays no role whatsoever in preservation.
    Fermentation occurs strictly under anaerobic conditions while spoilage may occur under both aerobic and anaerobic conditions

19. **Under what conditions will one use pasteurization over sterilization**
    - Depends on the media: For substances in liquid medium pasteurization is preferred over sterilization and vice versa. And more also for food substance that can't withstand over 100 degrees of heating
    - In acidic media pasteurization will be better
    - Pasteurization is normally for acidic foods and those that cannot withstand high temperatures. However, most importantly pasteurization is target at specific organisms.

20. **How many people should have symptoms of a particular food borne disease so that it can be categorized as an epidemic**?
    15 cases (or more) per 100000 people for 2 consecutive weeks

21. **What is the difference between contamination and pollution**?
    Pollution is introduction of potentially toxic substances into the environment while contamination is presence of extraneous especially infectious material that is harmful or we can say any foreign body which should not be there

    The difference lies also in their relative concentrations. When the concentration of the pollutant (contaminant) is low, there is contamination but where the concentration is high, there is pollution.

    However, you can have a contaminated environment without it being polluted but you cannot have a polluted environment without it being contaminated.

22. **What is freeze-drying?**
    Rapidly freezing a food substance then subjecting it to a high vacuum which removes ice by sublimation. Therefore, the item is both frozen and dried.

23. **What are the steps in making cheese?**
    - ***Standardize milk****: Adjusting the protein to fat ratio to make a good quality cheese with a high yield.*
    - ***Pasteurize milk****: Milk is mildly heated to reduce number of spoilage microbes and to improve the environment for the starter culture to grow.*
    - ***Cool Milk****: Milk is cooled to 32 degrees Celsius to bring it to a temperature needed for starter Bacteria to grow*
    - ***Inoculate with Starter and Non-Starter adjunct and ripen:*** *The starter and any non-starter adjunct is added and held for 30mins to ripen(to ferment and lower pH, allow bacteria to grow and for flavor)*

- ***Add rennet and form curd****: Rennet is the enzyme that acts on milk to curd it. After rennet is added, the curd is not disturbed for 30 mins so a firm coagulum is formed.*
- ***Cut curd and heat****: Curd is allowed to ferment until pH = 6.4. Curd is cut with cheese knives into small pieces and heated into 38°C. Heating helps to separate whey from curd.*
- ***Drain whey****: Whey is drained from the vat to form a mat.*
- ***Texture curd****: Curd mats are cut into sections and piled on each other and flipped periodically (cheddaring). This expels more whey, allows fermentation to continue until a pH of 5.1 to 5.5 is reached and knits the curd together.*
- ***Dry salt or Brine****: For cheddar cheese, sprinkled with salt for preservation and for mozzarella cheese, it is placed in brine.*
- ***Form cheese into blocks****: Salted curd pieces are shaped into blocks using hoops.*
- ***Store and age****: Cheese is stored in coolers and per the variety for several years.(this done for fermentation to continue making the cheese more acidic to prevent microbial attack such as E.coli)*
- ***Package****: Cheese may be cut and packaged into blocks or waxed.*

24. Difference between Best Before and Expiry date?

Expiry date provides information on the last day a product is safe to consume. Best before date informs you that the food is no longer in it's perfect shape from said date, ie. it may lose it taste or nutrients

25. What would be the danger of buying a product when the location of the manufacturer is not listed?

It has to deal with the authenticity of the product.

26. What would be the danger of buying a product without the manufacturer listed?

They have broken the law of labelling and it might mean the product is fake and when consumed could cause complications

27. Difference between Food borne intoxication and toxin-mediated food borne illness

- *For intoxication the illness is caused by a preformed toxin before food is ingested. So the microbe produce the toxin unto the food and when food is let say cooked, it may die but the toxin will still be able to cause illness when eaten.*
- *For* toxin-mediated food borne illness, *the live microbe is ingested and then when it gets into your gut it will produce toxins*

28. Difference between prebiotic, probiotic and antibiotic

- Probiotics: These are live bacteria found in certain foods or supplements intended to maintain or improve the normal microflora in the body.
  -Probiotics: are live microbes that are used as agents to alter the composition or metabolic activities of the microbiota, or to modulate Immune system reactivity in a way that benefits health
  -Eg. bifidobacteria, Enterococcus and lactobacilli in the colon

Probiotic foods- sauerkraut, kombucha and kimchi, yogurt, kefir, buttermilk, sourdough bread, miso, tempeh, and even beer and wine

- Prebiotics: Prebiotics are specialized plant fibers. They act like fertilizers that stimulate the growth of healthy bacteria in the gut.

Eg of prebiotics- Onions, garlic, banana, asparagus, leeks, yam, whole grains, soybeans, and other fruits and vegetables

- Antibiotics tend to kill off all types of bacteria, which means the good, beneficial bacteria is often killed right along with it. This can lead to an imbalance of intestinal flora and cause yeast infections and also digestive issues.

29. **Why is canning a bactericidal method of preservation**?

30. **What is food security?**

Food security is a condition in which all people at all time have physical, social and economic access to sufficient, safe and nutritious food that meets their needs and food preferences for an active and healthy life.

31. **Give key points in food handling?**

32. **What is kefir and koumis**

    Koumiss: Slightly higher in alcohol content ranging from 0.7-2.5%
    Kefir: content of alcohol is 0.05-0.5%

    Koumiss: Starter is found on mare milk
    Kefir: Starter is found on kefir grains

    Koumiss: Raw milk of mare or camel is used
    Kefir: Raw milk of cow is used

33. **Why is soap and water more hygienic that using sanitizers for hand washing?**
    - *Hand sanitizers might not remove harmful chemicals, like pesticides and heavy metals, from hands*
    - *Despite their effectiveness, non-water agents do not cleanse the hands of organic material, but simply disinfect them. It is for this reason that hand sanitizers are not as effective as soap and water at preventing the spread of many pathogens, since the pathogens still remain on the hands*

"YOU CANNOT AFFORD NOT TO KNOW" QUESTIONS

1. **What is putrefy**
   Deterioration of a substance or separation of a compound body into their constituent principles to rot or decay

2. **Microbiology of putting food in water or hiding it in soil**
   Burying food creates a friendly environment for food hence preventing microbial attack. The water also serves as a barrier that reduces the incidence of direct microbial attack

3. **Mention two examples of Spore formers**
   Bacillus and sporolactobacillus

4. **Examples of animal toxins**
   Tetrodoxin (found in pufferfish)

5. **Control of animal toxin**
   - Avoid consumption of reef fish
   - Animal meat should be well cooked

6. **How mushrooms are cultivated**
   - Preparation of substrate
   - Bagging
   - Place in a bag and sterilize
   - Innoculation
   - Incubation

7. **Benefits of mushroom**
   High fibre, less cholesterol, protein, vitamins A D K, protects and boosts immune system

8. **Symptoms of mushroom infection**
   Abdominal pains, Nausea, Diarrhoea,vomiting

9. **Economic Importance of Bacillus thurigiensis**
   - Cleaning agents
   - Pest control
   - In food industry
   - Bioremediation
   - Paper and textiles production
   - Causes anthrax

10. **Economic importance of Escherichia**
    - Causes infections and diseases
    - Production of insulin
    - Used to generate cancer-fighting drugs
    - Cause food poisoning
    - Used as probiotics

11. **Biological toxins other than those from microbes**
    i. Plant toxins
    ii. Animal toxins

12. **Mention some examples of plant toxins**
    Alkaloids, Glycosides (from Mustard oil), tannins (pyrogallol), lectin(from legumes), Tomatine (tomatoes)Linamarin(from cassava), mimosine (mimosa)

13. **What is pasteurization**
    Use of mild heat to kill heat sensitive organisms. It is done to reduce amount of spoilage organisms and also to eliminate particular microbes

14. **Under what circumstance would you use pasteurization over sterilization and cooking**
    When food cannot withstand high heat conditions

15. **Under what condition would water boil at 100ºC**
    When it is pure or when there are no solutes(food/materials) inside

16. **Under what condition would water boil below 100ºC**
    When there are solutes or other materials in it

17. **When does boiling occur**
    When the vapour pressure is equal to the atmospheric pressure

18. **Why do we cook (boil)**
    Because after cooking (boiling) the composition of food substance does not provide the environmental conditions and nutrients for the survival of microbes

19. **What is done after pasteurization and why is it done.**
    Cooling. Done to
    - Restore conditions suitable for the survival of microbes that are present.
    - To inactivate organisms that prefer higher temperatures

20. **Which group of micro organisms would survive pasteurization**

21. **What is preservation and why is it done**
    Process used to extend the shelf life of a product
    -Done to keep product for times of safety
    -To keep product for export

22. **What is curing**
    Removal of moisture from products

23. **What is salting**
    An osmotic process that uses high salt content to draw water from products

24. **Why is drying microbistatic**
    Because it is aimed at reducing microbial activity

25. **What are some substances/ chemicals contained in smoke absorbed by the material (fish/meat) that prevents spoilage**
    Fomaldehyde, Acetic acid

26. **Advantage of drying to conveying food in fresh form**
    In drying, taste and flavor is affected yet shelf life is extended

27. **What is Blanching?**
    A cooking process wherein food usually a vegetable is scalded in boiling water and removed after a brief moment mainly to help reduce quality loss over time and stop enzyme action which can cause loss of flavor,color and texture.

28. **Why do we homogenize and what quality does it confer on the product**

i. Makes product whiter: Fats are broken down into smaller ones, centres of reflection increase making the substance whiter
ii. Makes product more viscous. Fats separate.
iii. For stability and textural improvement

29. In terms of physical and chemical changes, which is better for freezing; slow or quick freezing?
Quick freezing. Quick freezing stops metabolic activities of microbes and sometimes kills them but slow freezing accommodates the metabolic activities of microbes for sometime.

30. Why do more microbes die during slow freezing than during quick freezing?

31. Mention some organic acids and their salts (preservatives)
i. Foods they are used on
ii. The bacteria they fight
iii. Mechanisms on which they act

32. Most preservatives are weak acids and their salts. What are the factors that make them effective as preservatives?
- **pH of the medium**- Low pH acidity is high
- **Salinity of the medium-** more H+ ions in the solution thus more microbes are killed when they are in high quantities

33. What are food additives?

34. Qualities that qualify a substance as a preservative
a. Should ideally be innocuous to the consumer and it should not be an allergen.
b. The consumer should not be an allergen
c. It should be microbicidal rather than microbistatic to a wide range of possible contaminants.
d. It should not be inactivated by the constituents of the food or by the products of microbial contamination.
e. Again preservatives should not only be water soluble but also be odourless, colourless and tasteless in addition to being microbicidal

35. Why are lactobacillus described as protocoperative?
Meaning interaction is mutual but not totally interdependent. One can act in the absence of the other but will not be as effective as it would have been if the other were present.

36. Why heat is applied for long period (during yoghurt production)
- Prevents compretiton between starter culture and other rmicrobes
- Creates conducive environment for starter culture
- Expulsion of some amount of oxygen

37. Why are certain ingredients added in yoghurt production?

38. What are the main aims/reasons of fermentation
- To make food safe
- To preserve food
- Add flavor
- Make food more nutritious

39. Name some examples of fermented products
Cheese, Sauerkraut, milk

40. What makes cheese more stable than milk?

41. **With reasons, arrange the following in order of increasing; Cheese, yoghurt, milk;**
    - **Shelf stability**:- in terms of pH (milk<yoghurt<cheese). pH of milk is nearly neutral thus microbes will thrive better in milk than in yoghurt and cheese. Cheese has higher pH than yoghurt. Cheese has a longer period of incubation (fermentation) thus it is better preserved than yoghurt.
    - **High water activity:-** Higher water activity in milk than yoghurt, then cheese

42. **Metabolic activity of the microbes depend mostly on the intrinsic factors. Name some of these intrinsic factors**
    - Moisture
    - Sugar composition:- Raw material with sugar support yeast growth. This aids in converting sugar to alcohol and alcohol itself has the property of inhibiting other microbial activity, hence preserving the food.

43. **How does temperature affect enzymatic activity?**

44. **Why are there limitations to the definition of fermentation?**
    Because other products, other than alcohol, are formed.

45. **What makes actinomyces in certain yeast and bacteria common?**
    Because they can very low pH, water activity and anaerobic conditions making them most common

46. **Yeast, moulds and LAB; which would thrive best under**
    - **Low water activity**:- moulds thrive best under **low water activity**, **low pH**, and **low sugar content**
    - **Anaerobic conditions**;- Yeast and LAB
    - **Which affects cereals, sugar & sugar products**;- Moulds because they can withstand low water activity.

47. **What makes fermentation irreplaceable as compared to other food processing and preservation methods?**
    Because of the organoleptic properties (Flavor and aroma) it confers on the product

48. **What role does the extent of incubation and the kind of starters used play in the production of certain foods**
    It determines which products are formed

49. **What is the first prerequisite for preparing any fermented product?**
    No antimicrobials are required

50. **What are sanitizers?**
    Chemicals/solutions/compounds that inactivate or kill microbes

51. **Mention 4 effects of antimicobials**
    - Hinder the activity of beneficial microbes
    - Economic loss
    - May render product hazardous
    - May lead to the growth of pathogens

52. Mention some examples of foodborne diseases apart from cholera

53. **Risk factors of food borne diseases**
    - Undercooked food
    - Poor personal hygiene
    - Obtaining food from unsafe sources

54. What are some features of a potentially hazardous food

a. High water content
b. Slightly acidic or neutral
c. Can support microbial growth

55. What are some effects of food borne diseases on the economy

i. Purchase of drugs come with high costs
ii. Economic stress
iii. Decreased productivity

56. Why are the aged, children and people on drugs and pregnant women more at risk of food borne diseases

- **The aged**- because of their deteriorating immune system
- **People on drugs and pregnant women**- compromised immune systems
- **Children**- Immune system not matured and equipped, together with their small body size means infectiiiion spreads faster

57. Which sustainable development goal is linked with the world toilet day

58. Mention any 2 methods of assuring consumers food is safe

- HACCP
- Culture techniques

59. What are the 2 most important things to ensure food is safe for consumers

i. Personal hygiene
ii. Safe handling techniques

60. Why are different levels of heat needed for different foods (canned foods)

61. What is the food handlers test

62. Briefly describe the following disease

Goitre
Scurvy
Beriberi

63. What are the health effects of eating too much

64. What are the 3 main types of hazards

Physical
Chemical
Biological

65. Mention 5 products that support aflatoxin production

66. Mention 2 conditions that affect aflatoxin production

67. What is the level of aflatoxin permissible in cerelac

68. What is aflatoxicosis

69. Although milk has high fat content, only few spoilage microbes attack. Why?

Because it has a protective layer that restricts the incidence of many kinds of microbes.

70. When casein is isolated from milk, the remaining liquid portion is called…….

Whey

71. **What name is given to the first milk produced by animals?**
Market milk

72. **Why is it adviseable to heat food after microwaving?**

73. **What are the significance of Food Labelling Laws?**
- Prevent consumer deception
- Ensure food safety
- Ensure fair trade practices
- Ensure good public health
- bring to light the possible risks**.**

74. **What are the types of cross contamination?**
- Direct contamination
- Indirect contamination

Sodium phosphate- in bread kills yeast but can kill moulds

Microbiology of drying

Red meat- contains more fat, found in beef and lamb. It has more myoglobin(cell which transportd oxygen to muscles in the bloodstream).

White meat- leaner, found in poultry (chicken) and fish

Hamburger- It's a sandwich consisting of one or more cooked minced meat(also called ground meat)