DSCC8 Model Questions

Unit 1 Food as a substrate for microorganisms

Very short answer type questions (1 mark each)

SL. No.

1. Define poising capacity.
2. Name an antimicrobial substance present in milk.
3. Name an antimicrobial substance present in an egg.
4. Name a thermophilic spore former bacteria.
5. Who are Psychrotrophs?
6. What is Buffering Capacity?
7. Define Relative Humidity.
8. Name a microorganism present in butter.
9. Name a microorganism present in fish.

Short answer type questions (2 marks each)

SL. No.

1. Define water activity
2. What are some industrial processes that use bacteria?
3. Milk is an excellent bacteriological culture medium. Explain.
4. What happens to bacteria in a food when the water activity is changed from 0.998 to 0.945?
5. Why do some bacteria survive in low water activity and others die?
6. Mention the intrinsic factors affecting microorganisms present in food.
7. How redox potential affects microorganisms in food?
8. What kinds of microbes would you expect to find in the following foods? Give reasons for your predictions.
   i)comminuted (minced) beef
   ii) freshly cooked rice
   iii) freshly prepared salad
   iv) yoghurt
9. What are the intrinsic factors for microbial growth?

10. Explain the role of pH on the growth of microorganisms.

11. What is the effect of gaseous atmosphere on food microorganisms?

Unit 2 Microbial spoilage of various foods

Very short answer type questions (1 mark each)

SL. No.

1. What is the lowest temperature at which food spoiling bacteria will grow?

2. What physiological type of bacteria are present in canned food?

3. Name a microorganism present in the refrigerator.

4. Name a radiation resistant bacterial genus.

5. Name a Gram-positive rod which causes foodborne infection.

6. Name the species responsible for thermophilic flat-sour defects in canned foods.

7. What is the Lowest temperature reported for growth of proteolytic strains of *Clostridium botulinum* .

8. Name the most heat resistant pathogen found in milk.

9. Name a gas former involved in food spoilage.

10. What kind of bacteria are responsible for spoiling protein rich foods?

11. Name a bacteria responsible for degrading fat rich foods.

12. Name the microorganism responsible for chalky bread.

13. Name the microorganism responsible for causing soft rot in vegetables.

14. Name the microorganism responsible for green rot.

15. Mention the causative agent of sulphide stinker spoilage of canned food.

16. What causes ropiness in bread?

17. Which microorganism causes black rot of egg?

18. Write the full form of FSSAI.

Short answer type questions:

SL. No.

1. Mention two types of microbial activity which influences the safety of foods.

2. Define the term food intoxication.

3. What do you mean by food poisoning?

4. Explain Millard reaction.

5. What is rancidity? Name a microorganism responsible for rancidity.

6. Mention the 3 types of spoilage seen in canned foods.

7. Write a note on the major sources of microbial contamination of food.

8. Give a microbial species or microbial group that could be involved in the following
   a) Spoilage of vacuum packaged pork sausage stored at 2C
   b) Spoilage of eggs at stored at 2C
   c) Spoilage of strawberries
   d) Spoilage of honey

9. Explain what is meant by microbial food spoilage.

10. Comment on the role of thermodurics in food spoilage.

11. Write about microbes associated with food spoilage

12. What are the effects of food composition on the spoilage process?

13. Why does ground meat provide a better environment for the growth of food spoilage organisms than solid cuts of meats?

14. How does food borne intoxication differ from food borne infection?

Unit 3 Principles and method of food preservation

Short answer type questions (2 marks each)

SL. No.

1. What is the critical temperature in thermal processing of animal products to ensure destruction of viruses?

2. What is blanching? What is its effect on food?

3. Differentiate between pasteurization and appertization.

4. Define lyophilization.

5. What do you mean by pickling? Mention its uses.

6. Name two antioxidants used in food preservation.

7. What is curing meat?

8. Name three antibiotics used in food preservation.

9. What is Nisin?

10. Why should all the commercial sterile food be stored in cool and dry condition?

11. What do you mean by cold sterilization?

12. How does desiccation sterilise food? Name a food preserved by desiccation.

13. What method of food preservation removes water as a means for eliminating microbial growth?

14. What are the major gases involved in MAP?

15. Why should thawed food not be frozen again?

Broad answer type questions (more than 2 marks each)

SL. No.

1. Describe the principles upon which methods of food preservation are based.

2. Write a note on food preservation through use of radiation.

3. How syrups and brine helps in food preservation?

4. How long would it take to Reduce 109 *Bacillus stearothermophilus* to 1 at 121C. Dr = 5.8 min)

5. List the preservative for each of the following:
   a) Ideal Preservative for Bread.
   b) Fruit juices
   c) Dried fruits
   d) Tomato sauce

6. Name two cold preservation techniques and comment on their mode of action.

7. Write a note on aseptic packaging.

8. Write the mode of action of the following
   a) Sorbic acid
   b) Ethylene oxide

9. What general approaches are available to reduce the rate of or inhibit microbial food spoilage?

10. What are the advantages and disadvantages of using Ethylene oxides in food sterilization?

11. What factors must be considered while using antibiotics for food preservation?

Unit 4: Fermented foods

1. Briefly describe honey-wine.
2. State the organism involved in pulque fermentation.
3. What is the basis of tempeh fermentation?

4. Cite two examples of anti-hypertensive peptides.
5. What are the beneficial effects of CLA?
6. Cite the difference between yoghurt & buttermilk.
7. What is the basis of chief aroma generation in yoghurt?
8. How can the rubber-like consistency in cheese be generated?
9. Cite 2 properties of *L.delbruckii bulgaricus* in yoghurt fermentation.
10. State two examples of non-nutritive sweeteners used in yoghurt.
11. What are the types of soy sauce based on physical properties?
12. How can soybean defatting be done?
13. What are the starchy materials used in soy sauce fermentation?
14. State 3 crucial features of starter mold in soy sauce fermentation.
15. Cite 3 properties of finished koji.
16. What is the role of maturation microorganisms in soy sauce?
17. Give two examples of by-products of soy sauce fermentation.
18. Why cereal is considered as good microbial substrate?
19. State at least 3 advantages of sourdough.
20. What are the roles of yeast in sourdough fermentation?
21. Describe rope spoilage in sourdough.
22. Classify the cheese on the basis of curdling.
23. What is mold-ripened cheese? Give two examples.
24. Briefly discuss the role of rennet in separation of curd & whey.
25. Cite the action of lipases in cheese formation.
26. Define Togwa & Oat bran vellie.
27. What is the principal LAB of acidophilus milk preparation? What demerit is associated to it?
28. State the microbial composition of bio-yoghurt.
29. Give two examples each of bacterial & yeast component of kefir fermentation.
30. How kefir is different from yoghurt?
31. Classify koumiss.
32. State the major LAB involved in koumiss fermentation.
33. What is nisin? State the name of the LAB which produces it.
34. Define lantibiotic with example.

Unit 5: Food borne diseases (causative agents, foods involved, symptoms and preventive measures)

SL. No.	
1.	How was the name ‘Salmonella’ coined?
2.	Cite three identifying properties of salmonellae.
3.	What is the most heat-resistant type of salmonellae?
4.	Briefly describe the mechanism of action of diarrhoegenic toxin of salmonella.
5.	What is the basis of Widal test?
6.	Write the names of four important species of the genus Shigella.
7.	How can shigellae & salmonellae be differentiated by culturing on plate?
8.	What is the reason for the presence of blood in the stool in case of shigellosis?
9.	How can Shiga toxin initiate it’s toxic function?
10.	Discuss the symptoms of the disease caused by *Yersinia* sp.
11.	Enlist the virulence determinants of Yersinia. What is the basis of acid tolerance of *Yersinia enterocolitica*?
12.	Give the names of pathogenic listeriae. How can they be distinguished from non-pathogenic listeriae?
13.	Describe the roles of virulence factors of Listeria in a tabular form.
14.	In a tabular form represent the antibiotics used to treat the following diseases: Salmonellosis; Shigellosis; Listeriosis.
15.	Give 2 examples of chemicals present in foods to cause diseases in human.

16. Suggest some examples of food borne pathogens other than bacteria with causative agents & disease they cause briefly.

17. Briefly describe properties of bacteria to become successful pathogens.

18. Define the terms: Food poisoning, Food borne intoxication, Food borne infection.

19. How is cytosolic ubiquitin mediated protein degradation related to listeriosis?

20. What do you mean by pathogenicity island? How are these important in causing bacterial diseases- explain with suitable examples.

21. What is the role of TTSS in causing bacterial diseases? Explain in the light of any food borne disease.

22. How is mannitol salt medium useful in studying the growth of *S. aureus*?

23. Food borne intoxication usually take lesser time to initiate disease symptoms than food borne infections- justify with reason.

24. How does staphylococcal enterotoxin become resistant to heat & low pH?

25. Describe TSST-1. Why is it called Super antigen?

26. How can mishandling of food lead to staphylococcal intoxication?

27. What is the utility of toluidine blue agar in diagnosis of staphylococcal contamination?

28. How many types of botulinum toxins may be produced by *C. botulinum*? Mention the types.

29. How canned food may be related to food borne botulism?

30. Describe the differences between entero-cytotoxin & entero-neurotoxin with proper examples.

31. Diagrammatically represent the MOA if botulinal toxin. How can it be activated to become effective in the intestine?

32. Enlist the symptoms of food borne botulism.

33. How is infant botulism different from food borne botulism?

34. Briefly discuss the survival mechanism of Salmonellae in the endocytic vesicles of the host cells.

35. What are the additional virulence factors of salmonellae helping in fighting the hostile environment in the host gut?

36. How can salmonella systemic infection cause intestinal ulceration?

37. What is the basis of mobility of shigellae in the host cell cytoplasm?

38. Comment on the thermal stability of Listeriae in food samples.

39. Mention the roles of *actA* & *plcB* in listeria pathogenesis.

40. What is the basis of host cell adhesion of *C. jejuni*?

41. Enlist primary & secondary virulence factors of pathogenic *E. coli.*

42. Comment on the environmental reservoirs of *V. parahaemolyticus.*

43. What are the virulence & attachment factors of *V. parahaemolyticus?*

44. Mention 3 identifying features of *Campylobacter* sp.

45. Comment on the symptoms of *Campylobacter* mediated enterocolitis.

46. Describe the MOA of two types of toxins elaborated by *C. jejuni* briefly.

Unit 6: Food sanitation and control

SL. No.

1. Define the terms: a) Hazard analysis; b) Critical Control Point; c) Hazard; d) Critical Limit.

2. Briefly mention the six types of hazards included in Principle 1: *Assess Hazard & Risks*.

3. What is the role of 'Corrective Actions'?

4. State two limitations of HACCP.

5. What are the measures of typical CCP?

6. State & explain the differences between Critical limit & Critical point.

7. Compare the sanitising actions of Electrolysed oxidising water & Activated lactoferrin.

8. Discuss the roles of O_3 & H_2O_2 as food sanitisers.

Unit 7: Cultural and rapid detection methods of food borne pathogens in foods and introduction to predictive microbiology.

SL. No.

1. Mention three important purposes of rapid detection of food borne pathogens.

2. Comment on the utility of mPCR in rapid detection procedure.

3. How can qPCR be considered more advantageous over normal PCR method in detection of food borne pathogens?

4. Briefly discuss the principle of oligonucleotide microarray method in pathogen detection.

5. Briefly describe the principle of NASBA.

6. Cite the requirements of LAMP.

7. What is the basis of function of optical biosensors?

8. Describe the mode of actions of electrochemical & mass-based biosensors in detection of pathogens in foods.

9. State two differences between ELISA & ELFA.

10. Mention the utilities of predictive microbiology.