

P. P. SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination

December-2021

SSMB3090- Food and Dairy Microbiology -II

08.12.2021, Wednesday Time: 12:30 p.m. to 03:00 p.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

- 1.1a When shellfish are eaten raw or undercooked, they can cause foodborne illness due to the presence of
- A *Vibrio parahaemolyticus*
 - B *Bacillus cereus*
 - C *Listeria monocytogenes*
 - D *Escherichia coli*
- 1.1b Botulinum toxins
- A One of the most lethal substances known
 - B Can lead to respiratory and muscular paralysis
 - C Block nerve functions
 - D All of above
- 1.1c *Vibrio parahaemolyticus* is naturally occurring bacterium found in
- A Clams
 - B Mussels
 - C Oysters
 - D All of above
- 1.1d Listeriosis can cause
- A Premature birth
 - B Stillbirth
 - C All of them
 - D None of them
- 1.1e Campylobacteriosis is spread by
- A Practicing frequent hand washing
 - B Following good food safety practices
 - C Fecal-oral route
 - D All of above
- 1.1f Complications such as arthritis are caused by.
- A *Salmonella Infection*
 - B *Shigella flexneri*
 - C *Yersinia Infection*
 - D All of above

1.1g Mycotoxins are produced by

- A Fungi
- B Bacteria
- C Plants
- D All of above

1.1h *Bacillus cereus* is a foodborne pathogen that can produce toxins, causing

- A The emetic (vomiting) syndrome
- B The diarrheal syndrome.
- C Both A and B
- D None of above

1.1i Keeping food at lower temperature

- A kills bacteria from food
- B Stimulate growth of most probiotic microorganisms
- C Slow down the growth of microorganisms
- D Kills all foodborne microorganisms

1.1j Prevention of Shigellosis can be done by

- A Practicing frequent hand washing
- B Following good food safety practices
- C providing safe drinking water
- D All of above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

1.2a Shigatoxin is the toxin produced by the ____

1.2b Hemolytic uremic syndrome is caused by ____

1.2c Give name of any two food that should be avoided to prevent listeriosis.

1.2d Botulinum toxins are neurotoxic affect the nervous system and lead to respiratory and muscular paralysis (True/False)

1.2e Foodborne infection is caused by the ingestion of food containing live bacteria which cannot grow and establish themselves in the human intestinal tract. (True/False)

Q.2 Short Notes (Attempt any two) [06]

A Give a note on *Listeria monocytogenes*.

B Explain Foodborne botulism.

C Write a note on Shigella infection.

Q.3 Explain in detail (Attempt any two) [14]

A Write a detailed note on Salmonella infection.

B Give a detailed note on staphylococcal food poisoning.

C Explain *Escherichia coli* (E. coli) infection in detail.

Section-II (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

- 1.1a** Flow cytometry employs which of the following for its cell analysis?
- A Impedance
 - B A laser
 - C Both A and B
 - D None of the above
- 1.1b** Types of food contaminants?
- A Bacterial toxins
 - B Pesticide residues
 - C Chemicals produced during processing
 - D All of above
- 1.1c** Culture-based methods will detect microorganisms that are present in the
- A Viable and culturable state
 - B Viable but non-culturable (VBNC) state
 - C Non-Viable but non-culturable (VBNC) state
 - D All of above
- 1.1d** Which of the following are reasons for the increasing incidence of food-borne illness?
- A Increased consumption of foods imported from foreign countries
 - B Less numbers of individuals eating in restaurants
 - C Better diagnosis by physicians
 - D All of above
- 1.1e** What is not the elements of cleaning and sanitizing?
- A Clean-in-place (CIP) systems, clean-out-of-place (COP),
 - B Foaming
 - C Spraying
 - D Breaking
- 1.1f** Which of the following is not the rapid method to detect the pathogenic organisms?
- A Epifluorescence microscopy
 - B Colony counting
 - C PCR
 - D ELISA
- 1.1g** Criteria which are defined as the acceptability of a product by ICMSF are
- A A microbiological standard
 - B A microbiological specification
 - C A microbiological guideline
 - D All of the above
- 1.1h** HACCP Principles are
- A suitable to be implemented by organizations directly or indirectly involved in various sectors of the food industry and related supply chain.
 - B suitable to be implemented by organizations directly or indirectly involved in various sectors of the textile industries
 - C None of them

- D Both of them
- 1.1i** Which of the following statements is accurate for the PCR – polymerase chain reaction?
- A Automated PCR machines are called thermal cyclers
 - B A thermostable DNA polymerase is required
 - C Millions to billions of desired DNA copies can be produced from microgram quantities of DNA
 - D All of the above

- 1.1j** What sectors is HACCP applicable to?
- A The motor industry and specifically the production line
 - B It is suitable to be implemented by organizations directly or indirectly involved in various sectors of the food industry and related supply chain.
 - C Software development.
 - D All of the above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

- 1.2a** Define microbial indicators.
- 1.2b** What are Biosensors?
- 1.2c** What is full form of FRET.
- 1.2d** Traditional culture-based methods rely on the ability of microorganisms to grow and multiply on laboratory media and form visible colonies. (True or False)
- 1.2e** SYBR Green dye binds only the double stranded DNA. (True or False)

Q.2 Short Notes (Attempt any two) [06]

- A Enlist the criteria for an ideal indicator organism.
- B Write a short note on coliforms as microbial indicators.
- C Enlist the factors affecting the production of mycotoxins.

Q.3 Explain in detail (Attempt any two) [14]

- A Explain the seven principles of HACCP implementation.
- B How PCR can be used to detect food borne pathogens?
- C Explain the main Elements of cleaning and sanitizing.