

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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## M. Sc. (Microbiology) (Fourth Semester)

### EXAMINATION, July, 2022

#### (Elective)

#### FOOD MICROBIOLOGY

Paper Code					
MIC	4	0	0	3	(A)

Questions Booklet  
Series

C

Time : 1:30 Hours ]

[ Maximum Marks : 100

#### Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 60 questions. Examinee is required to answer any 50 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 50 questions are attempted by student, then the first attempted 50 questions will be considered for evaluation. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

#### परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 60 प्रश्न हैं। परीक्षार्थी को किन्हीं 50 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 50 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 50 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

***(Only for Rough Work)***

1. Mycoprotein is produced by :  
 (A) *P. halophilus*  
 (B) *Lactobacillus brevis*  
 (C) *S. rouxii*  
 (D) *Fusarium venenatum*
2. Which of these are not easily spoilt ?  
 (A) Butter  
 (B) Milk  
 (C) Yogurt  
 (D) Paneer
3. Acidophilus milk which is used for its therapeutic properties in intestinal disorders requires for its manufacture a pure culture of :  
 (A) *Lactobacillus bulgaricus*  
 (B) *Streptococcus thermophilus*  
 (C) *Lactobacillus acidophilus*  
 (D) None of the above
4. Surface taint in butter which is blamed on *Pseudomonas putrefaciens* is also called as :  
 (A) rancidity  
 (B) putridity  
 (C) Both (A) and (B)  
 (D) None of the above
5. Ropiness caused by Enterobacter usually is :  
 (A) Red coloration  
 (B) Gray colouration  
 (C) Stringy or slimy milk  
 (D) All of the above
6. Microorganism abundant in raw milk and are commonly used as probiotics.  
 (A) *Lactobacillus casei*  
 (B) *L. rhamnosus*  
 (C) *Streptococcus thermophilus*  
 (D) All of the above
7. Fishiness in butter is caused by :  
 (A) *Aeromonas hydrophila*  
 (B) *Pseudomonas synxantha*  
 (C) *Pseudomonas syncyanea*  
 (D) None of the above
8. The chief type of spoilage in sweetened condensed milk may be :  
 (A) gas formation by sucrose fermenting yeasts  
 (B) thickening caused by micrococci  
 (C) mold colonies growing on the surface  
 (D) All of the above

9. The water activity ( $a_w$ ) for pure water is :
- (A) 1.00
  - (B) 9.99
  - (C) 0.9823
  - (D) 0.1
10. Organisms that grow over a wide range of pH are :
- (A) bacteria
  - (B) yeasts
  - (C) thermophilic anaerobes
  - (D) molds
11. Avidin is present in :
- (A) meat
  - (B) fish
  - (C) eggs
  - (D) fruits
12. Method used in milk drying is :
- (A) Spray
  - (B) Drum
  - (C) Freeze
  - (D) All of the above
13. Compound used in the Reduction test of the milk is :
- (A) Methylene blue
  - (B) Alkaline phosphatase
  - (C) Disodium para-nitro phenyl phosphate
  - (D) Methyl Red
14. Which compound is utilized in the alkaline phosphatase test of milk ?
- (A) Methylene blue
  - (B) Alkaline phosphatase
  - (C) Disodium para-nitro phenyl phosphate
  - (D) Methyl Red
15. Prevention of self-decomposition can be accomplished by :
- (A) Blanching
  - (B) Washing
  - (C) Chemicals
  - (D) Heat

16. The rapid and constant rate of multiplication of an organism occurs during the :
- (A) lag phase
  - (B) exponential phase
  - (C) stationary phase
  - (D) survival phase
17. The widely used application of asepsis is :
- (A) clean handling
  - (B) decontamination
  - (C) packaging
  - (D) radiation
18. Berries and Sauerkraut are classified as :
- (A) high-acid foods
  - (B) acid foods
  - (C) medium-acid foods
  - (D) low-acid foods
19. The 'Father of Canning is' :
- (A) Nicholas Appert
  - (B) Spallanzani
  - (C) Lopez
  - (D) Peter Durand
20. Meat, fish, etc., are grouped under :
- (A) low-acid foods
  - (B) medium-acid foods
  - (C) acid foods
  - (D) high-acid foods
21. An exposure at 60°C for 10 to 15 minutes kills :
- (A) ascospores
  - (B) oospores
  - (C) basidiospores
  - (D) None of the above
22. 99% of bacteria are removed by :
- (A) blanching
  - (B) sweating
  - (C) smoking
  - (D) sun drying
23. Sulfuring helps :
- (A) conserve vitamin C
  - (B) maintain an attractive color
  - (C) repel insects
  - (D) All of the above

24. 'Sweating' is storage for :  
(A) re-addition of moisture to a desired level  
(B) reduces moisture  
(C) increases moisture  
(D) None of the above
25. Propionic acid is found naturally in :  
(A) Butter  
(B) Milk  
(C) Malt extract  
(D) Swiss cheese
26. The organic acid used in drinks, jams, jellies and syrups is :  
(A) oxalic acid  
(B) tartaric acid  
(C) citric acid  
(D) acetic acid
27. Sodium carbonate is used as an alkali dip before sun drying for :  
(A) cereals  
(B) nuts  
(C) vegetables  
(D) grapes
28. Acid dipping for apples and pears is done to prevent browning using :  
(A) ascorbic acid  
(B) malic acid  
(C) Both (A) and (B)  
(D) None of the above
29. Spoilage in foods may be due to :  
(A) insects  
(B) physical changes  
(C) growth and activity of microorganisms  
(D) All of the above
30. Criteria for the assurance of fitness in foods is :  
(A) freedom from pollution at any stage in production and handling  
(B) the desired stage of development or maturity  
(C) Both (A) and (B)  
(D) None of the above

31. An example of semi-perishable food is :
- (A) potatoes
  - (B) sugar
  - (C) meat
  - (D) eggs
32. *Streptococcus lactis* causes :
- (A) color change in milk
  - (B) no color change in milk
  - (C) no spoilage of milk
  - (D) production of antibiotics
33. A dry food like bread is most likely to be spoilt by :
- (A) molds
  - (B) mesophilic bacteria
  - (C) yeasts
  - (D) thermophilic bacteria
34. Freezing prevents :
- (A) concentration of solutes
  - (B) microbial growth
  - (C) damage to tissues
  - (D) removal of water
35. TDT is :
- (A) thermal death transfer
  - (B) transferred death time
  - (C) thermal death time
  - (D) thermal delayed time
36. The principal microorganism for yoghurt is ..... .
- (A) *Lactobacillus bulgaricus*
  - (B) *Streptococcus thermophilus*
  - (C) *S. cremoris*
  - (D) mixed culture of (A) and (B)
37. Shredded cabbage is the starting product for which of the following fermented food ?
- (A) Sauerkraut
  - (B) Pickles
  - (C) Green olives
  - (D) Sausage
38. Which of the following microorganisms has high vitamin content ?
- (A) Bacteria
  - (B) Yeast
  - (C) Algae
  - (D) Protozoa

39. Which of the following enzymes cut the DNA molecule at a particular nucleotide sequence ?
- (A) restriction endonuclease
  - (B) exonuclease
  - (C) ligase
  - (D) polymerase
40. The microorganisms added to Swiss cheese to improve flavor and assist eye formation is :
- (A) *Lactobacillus cremoris*
  - (B) *Lactobacillus bulgaricus*
  - (C) *Streptococcus thermophilus*
  - (D) *Propionibacterium freudenreichii*
41. Bacterial cultures have been preserved for months at room temperature on agar slants which contain :
- (A) 5% NaCl
  - (B) 1% NaCl
  - (C) 2% NaCl
  - (D) 4% NaCl
42. The most important organism in the production of amylase is :
- (A) *Bacillus subtilis*
  - (B) *Candida pulcherima*
  - (C) *Geotrichum candidum*
  - (D) *Saccharomyces cerevisiae*
43. Addition of which acid makes milk more digestible to infants ?
- (A) Citric acid
  - (B) Gluconic acid
  - (C) Amino acid
  - (D) Lactic acid
44. Sea foods and sea water may contain :
- (A) *Vibrio vulnificus*
  - (B) *Streptococcus faecalis*
  - (C) *Aeromonas hydrophilia*
  - (D) *Vibrio parahaemolyticus*
45. Pectinases are used in food industries to :
- (A) enhance flavor
  - (B) clarify fruit juices
  - (C) enhance color of juices
  - (D) retain freshness of juices

46. The substrate used in the production of SCP is .....
- (A) molasses
  - (B) acid hydrolystate of wood
  - (C) fruit wastes
  - (D) All of the above
47. Which of the following toxin causing botulism is less toxic to human beings ?
- (A) Type A
  - (B) Type B
  - (C) Type C
  - (D) Type D
48. Which of the following is a food infection ?
- (A) *Salmonellois*
  - (B) *Botulism*
  - (C) *Staphylococcal intoxication*
  - (D) None of the above
49. The staphylococcal intoxication refers to presence of :
- (A) an enterotoxin
  - (B) neurotoxin
  - (C) mycotoxin
  - (D) All of the above
50. A bacterial food intoxication refers to :
- (A) illness caused by presence of pathogens
  - (B) food borne illness caused by the presence of a bacterial toxin formed in food
  - (C) Both (A) and (B)
  - (D) None of the above
51. The method of successful treatment of botulism prior to appearance of botulism symptoms involve administration of :
- (A) antibiotic
  - (B) analgesic
  - (C) antitoxin
  - (D) antipyretic
52. Botulism is caused by the presence of toxin developed by :
- (A) *Salmonella* sp
  - (B) *Bacillus*
  - (C) *Clostridium*
  - (D) None of the above

53. Which of the following is true to prevent botulism from smoked fish ?
- (A) The fish should be heated at its coolest part to at least 82°C for 30 min. during or after smoking
  - (B) Fish should be immediately frozen after packaging and kept frozen
  - (C) Good sanitation should be maintained throughout production and handling
  - (D) All of the above
54. The botulism intoxication occurs due to :
- (A) an enterotoxin
  - (B) neurotoxin
  - (C) mycotoxin
  - (D) All of the above
55. Staphylococcal intoxication is caused by the toxin, the food from :
- (A) *S. aureus*
  - (B) *S. cerevisiae*
  - (C) *S. thermophilus*
  - (D) None of the above
56. An excessively high temperature in the fermentation of sauerkraut may inhibit the growth of :
- (A) *Leuconostoc*
  - (B) *Saccharomyces cerevisiae*
  - (C) *Geotrichum*
  - (D) None of the above
57. Proteolytic organisms utilize hydrolysis products of :
- (A) proteins
  - (B) peptides
  - (C) amino acids
  - (D) All of the above
58. Osmophilic organisms like yeasts grow best in :
- (A) low concentrations of sugar
  - (B) high concentrations of sugar
  - (C) low concentrations of salt
  - (D) high concentrations of salt
59. Too long fermentation of sauerkraut may favour the growth of :
- (A) *Lactobacillus lactis*
  - (B) *Lactobacillus brevis*
  - (C) *Bacillus subtilis*
  - (D) *Clostridium*
60. Microorganism used in the fermentation of soy-sauce :
- (A) *P. halophilus*
  - (B) *L. delbrueckii*
  - (C) *S. rouxii*
  - (D) All of the above

***(Only for Rough Work)***

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

**Example :**

**Question :**

Q. 1 (A) ☒ (B) (C) (D)

Q. 2 (A) (B) ☒ (C) (D)

Q. 3 (A) ☒ (B) (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

**Impt. :** On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छोटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ☒ (B) (C) (D)

प्रश्न 2 (A) (B) ☒ (C) (D)

प्रश्न 3 (A) ☒ (B) (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

**महत्वपूर्ण :** प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।