

**POST GRADUATE DIPLOMA IN
FOOD SCIENCE AND TECHNOLOGY****Term-End Examination****December, 2011****MFT-002 : FOOD MICROBIOLOGY**

Time : 3 hours

Maximum Marks : 70

Note : Attempt *all* the questions.*All the questions carry equal marks.***1. Fill in the blanks. 10x1=10**

- (a) This technique is used for long-term storage of microbial cultures in ampoules _____ or _____.
- (b) The starters specific for yoghurt fermentation are _____ and _____.
- (c) Ropy fermentation of milk or cream is caused and by organisms like _____ and _____.
- (d) Fresh milk has an acidity of _____ lactic acid and a pH of _____.
- (e) Pasteurization of milk is done either at _____ minutes or _____ seconds.
- (f) Secondary proteinaceous metabolites produced by certain organisms which have inhibitory effect on related or closely related species are termed as *bacteriocins*. Example _____.
- (g) These toxins act on the intestinal mucosa generally causing diarrhea _____.

- (h) Minimum acetic acid content in vinegar should be _____.
- (i) Soft rot of vegetables is caused by _____.
- (j) The amount of sodium chloride added to vegetables to obtain preservative action varies from _____ to _____.

2. Match the following.

20x $\frac{1}{2}$ =10

- | | |
|---------------------------|--|
| (a) Gas gangrene | (i) <i>Alcaligenes viscolactis</i> |
| (b) Soft rot | (ii) Edible mushroom |
| (c) Aflatoxin | (iii) Bacteriocin |
| (d) Sauerk raut | (iv) Chemical Preservative |
| (e) Kimchi | (v) <i>Clostridium thermosaccharolyticum</i> . |
| (f) Pasteurization | (vi) <i>Aspergillus flams</i> |
| (g) Bread mold | (vii) Fermented Cabbage |
| (h) <i>Clostridium</i> | (viii) <i>Erwinia</i> sp |
| (i) <i>Staphylococcus</i> | (ix) Canning |
| (j) UV radiation | (x) Fermented radish |
| (k) Beer | (xi) Louis Pasteur |
| (l) ELISA | (xii) Cold sterilization |
| (m) PCR | (xiii) Amplification of DNA fragments |
| (n) Gamma rays | (xiv) Antigen-antibody reactions |
| (o) TA spoilage | (xv) <i>Saccharomyces cerevisiae</i> |
| (p) Sorbate | (xvi) <i>Clostridium perfringens</i> |
| (q) Pediocin | (xvii) Germicidal Lamps |
| (r) <i>Agaricus</i> | (xviii) Enterotoxin |
| (s) Ropiness in milk | (xix) Neuro tox in |
| (t) Nicolas Appert | (xx) <i>Rhizopus stolonifer</i> . |

3. (a) Define the following in one sentence : $10 \times \frac{1}{2} = 5$
- (i) Spoilage microorganism
 - (ii) Curdling
 - (iii) Pasteurization
 - (iv) Proteolysis.
 - (v) Lipolysis
 - (vi) Gram - ve and Gram +ve bacteria
 - (vii) Broad spectrum antibiotic
 - (viii) Modified Atmosphere Packaging
 - (ix) Bacteriophage
 - (x) Yoghurt
- (b) Expand the following : $10 \times \frac{1}{2} = 5$
- (i) ATCC
 - (ii) MPN
 - (iii) UHT
 - (iv) LAF
 - (v) HACCP
 - (vi) SPC
 - (vii) CAP
 - (viii) a_w
 - (ix) HTST
 - (x) BIS
4. Write short note on *any two* of the following. $5 \times 2 = 10$
- (a) Classify microorganisms based on their optimum temperature of growth giving two suitable examples for each category.
 - (b) Define water activity and mention the minimum water activity required for the growth of molds, bacteria and yeasts.
 - (c) Classify foods based on their acidity giving two examples for each category.
 - (d) Define MA/CA storage of fruits and vegetables. Mention the minimum and maximum CO_2 levels tolerated by most fruits and vegetables.

5. (a) Describe the spoilage of meat and what are the preservation techniques used for meat and meat products ? 10

OR

- (b) Define "early gas" and "late gas" formation in cheeses along with the causal organisms. 3+3+4

6. (a) Define starters and bring out some of the main objectives of using starter cultures in foods. Give four examples of commonly used dairy starters. 2+4+4

OR

- (b) Answer the following : 5x2=10
- (i) Define Relative Humidity
 - (ii) Name the two steps in vinegar fermentation and the organisms involved.
 - (iii) Define D and F value
 - (iv) Distinguish between Prebiotics and Probiotics
 - (v) Classify radiation for sterilization.

7. (a) Differentiate between food intoxication and food infection with suitable examples. 5

OR

- (b) Define blanching and exhausting in the processing of fruits and vegetables. Highlight the significance of blanching in fruits and vegetables. 5
- (c) Outline the principle of Gram's staining technique. Give three examples of G+ve and G-ve bacteria. 5