Total Number of printed pages = 3

19/4thSem/UFET 404

2022

FOOD MICROBIOLOGY AND FOOD BIOTECHNOLOGY

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What is "Genetically Modified (GM)" food ? Elaborate on application of Tiplasmid for genetic engineering of food crops. Use a schematic diagram to enrich your answer. 2+10=12

   (b) Describe "Cheddaring", and what is its significance in cheese processing. 3

   (c) Write a short note on Sauerkraut fermentation. 5

2. (a) Describe how microbial survival and growth depends on : 5+5=10

   (i) water activity and

   (ii) presence/absence of oxygen.

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(b) Describe homofermentative lactic acid fermentation using a flow-diagram. What is the difference between homo- and heterolactic fermentations ? 8+2=10

3. (a) What are the three modes of food borne disease ? Explain with an example for each. 8

(b) Elaborate on processing of Koumiss using a process flow-diagram. List two dairy products, in which diacetyl has significant flavor contribution. 10+2=12

4. (a) Explain the following statements : 6+6=12

(i) Nitrate salts play crucial roles in color development in sausages.

(ii) DNA structure resembles twisted ladder, a shape known as "double helix".

(b) Define "food borne outbreak". What are the symptoms of staphylococcal intoxication ? Presence of *Shigella* spp. in food primarily signify what kind of contamination ? What are the common routes of *Shigella* contamination in food ? What is the name of the toxin produced by the pathogen, and what are the symptoms of shigellosis ? 2+1+2+3=8

5. (a) Describe transduction. Elaborate the translation process that occurs in ribosome. Use a schematic diagram to make your elaboration better. 2+8=10

(b) What is "malt" ? Describe malting process in beer manufacturing. What are beer adjuncts, and what are their significances in beer processing ? 1+5+4=10

6. (a) Briefly explain rDNA technology. What are cloning vectors, and discuss the three major types of cloning vectors with examples. 3+4=7

(b) Explain malolactic fermentation in wine. Use a reaction scheme to elaborate on conversion of glucose to acetic acid in vinegar fermentation. 3+4=7

(c) Name a causative agent of trichinellosis. What is the primary food vehicle of trichinellosis infection ? Describe the treatment and prevention of Trichinella infection. 1+1+4=6