

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI

FIRST SEMESTER 2023-24

BIOT F424 Food Biotechnology

MID SEMESTER EXAMINATION

Max. Marks: 60M

Time: 90 mins

Date: 10/10/2023

Note: All questions are compulsory. Don't jumble up the subparts of a question. Attempt all the subparts together.

Support your answer with proper justification and diagrams.

Q1. A) Describe what happens to bacteria in a food when the water activity is changed from 0.998 to 0.945? Is it the same with all micro-organisms affecting food? **3M**

B) Meat is traditionally dried by adding table salt to it. Can you suggest why salting enables the meat to be stored for a long time? **3M**

Q2. A) Describe the term "Hetero-lactic bacteria"? What is their main use in food industry? **3M**

B) Cassava plant consists of two varieties: One that is highly toxic and the other with low toxicity or safe to use. What is the reason for the toxicity? Detail the mechanism of the same? How food processing helps in reducing toxicity of cassava plant? **4M**

Q3. A) Explain the importance of the **number** and **kind** of microorganisms initially present in foods intended to be preserved. **4M**

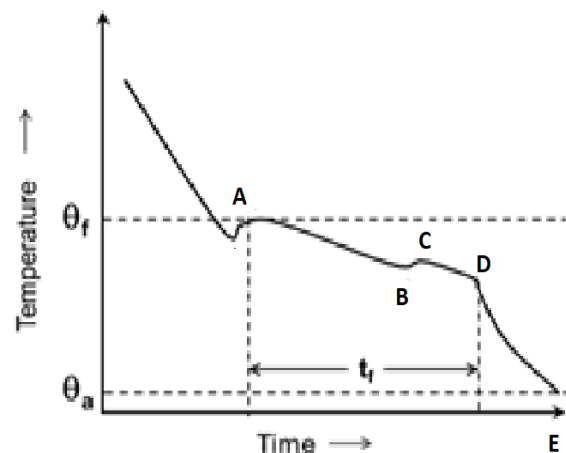
B) How acidity affect the food preservation process by heating? **3M**

C) What is F value? Find two equivalent processes at 100°C and 150°C, which will deliver the same lethality as the required F_{121} value of 4.5 min for food preservation. **4M**

Q4.

A) Differentiate between primary and secondary nucleation. **3M**

B) The given graph represents the freezing curve for a food material. Show diagrammatically how is it different from that of pure water? Explain the changes happening between A and B (portion represented by AB) and C and D (portion shown as CD) respectively **5M**



- Q5. A) What are para-probiotics? How is their mode of action different from Post-biotics? **4M**
B) Explain the mechanism of DEFT and Electrical impedance in detection of spoilage of food. Support your answer with proper diagram or graph **4M**
- Q6. A) What are the disadvantages of blanching? How can these be minimized? **3M**
B) Why the milk is homogenized before pasteurization? How the unopened tetra-pack of milk is stable for almost 6 months without refrigeration? **3M**
C) What is the temperature danger zone? How is it important in food preservation? **3M**
- Q7. A) How mycoproteins has revolutionized the food industry? **3M**
B) What do you understand by the term “Aflatoxins”. Comment on their significance in Food Preservation. **2M**
C) What is Most Probable Number. When is it used in food microbiology? **3M**
- Q8. Compare the dry and wet cleaning methods for food processing in terms of their advantage and disadvantage **3M**