Ref. No. Ex/FTBE/PC/B/T/312/2024

B.E (FTBE) SECOND YEAR, SECOND SEMESTER EXAMINATION 2024

Time : Three hours Full Marks : 100

PRINCIPLES OF FOOD PRESERVATION-II, PART- I (50 MARKS)

ANSWER Q1 AND ANY TWO FROM THE REST

Q1. Fill in the blanks: **10 × 1 = 10**

a. Emulsifiers must be added .....to oil and aqueous phases for emulsion formation.
b. Desiccated coconut flakes packaged inside a plastic pouch must have.....as an additive.
c. Bananas turn black when cut but can be prevented by addition of.....
d. Choice of an emulsifier is primarily based on it's.....
e. Choice of an antimicrobial agent as a food additive is primarily dictated by .....
f. The only chemical allowed in cooking oils for prevention of rancidity is.....
g. A marathon runner during refreshment breaks is likely to consume a very harmful substance known as.....
h. .....fermented taste of acidulants is most preferred in wine.
i. Your neighborhood tubewell water is very likely to be contaminated with.....neurotoxin.
j. Choice of an acidulant as a food additive is primarily dependent on.....

Q2. Explain the following (any 5): **5 × 4 = 20**

a. Packaged coconut flakes are not prone to mold attack.
b. Baby bottles must be manufactured and used with care.
c. Bland noodles are tasty.
d. Few bacteria can also preserve food.
e. Citric acid has multiple roles as a food additive.
f. Concerns in long-term usage of PET bottles for drinking water.

Q3. Explain the following:

a. Factors to be considered in selecting an acidulant for use in food products (provide appropriate examples). What is the role of acidulants in soft drinks? **8 + 4**

OR

b. Factors to be considered in selecting an antimicrobial agent for use in food products (provide appropriate examples). What are the roles of 'sorbitol' and 'benzoic acid' as antimicrobials? ? **8 + 4**

c. For food products packaged in 'Glass' and 'Metal' containers, what concerns do you have regarding food additives? **4 + 4**

Q4. Distinguish between with examples (any four): **4 × 5 = 20**

a. Flavoring agents vs. Flavor-enhancing agents
b. Humectants vs. Anticaking agents
c. Enrichment vs. Fortification
d. Firming agent vs. Release agent
e. Leavening agent vs. Bulking agent

[Turn over

Ex/FTBE/PC/B/T/312/2024

B.E (FTBE) 3RD YEAR-1ST SEMESTER EXAMINATION 2024

Principles of Food Preservation – II

Part-II (Full marks 50)

[Answer any four of the following questions (4 x 12.5 = 50)]

1. With a neat sketch show parts of a single screw extruder. Why are the expanded snacks produced by extrusion so porous and light weight . What do you mean by 'twin screw extrusion' and what is its merit over the single screw extrusion? 4 + 4.5 + (2 + 2)

2. What are 'expansion ratio' and 'L/D' ratio in relation to extrusion? Comment on the effects on the quality of products through extrusion when (i) screw speed is made very low (ii) feed rate is made very high . Write three advantages and two disadvantages of food extrusion. 4+ (3 + 3) + 2.5

3. Mention the factors which contribute to the inhibition of microbial growth in cans. What are 'TFS' and 'Tin plate' cans? Why do we require 'blanching' and 'exhausting' during canning operation? What are 'two-piece' and 'three-piece can'? 2 + 3 + (2.5 +2) + 3

4. What is 'head space' and what should the value of it in reference to canning? What do you mean by 'lacquering'? Write the steps of canning of fruit/ vegetable item. Mention different types of peeling processes. Name the causative organisms for 'flat sour spoilage' 2.5 + 2 + 4 + 2 + 2

5. (a) The decimal reduction time for spores of a certain bacterium at 121^0C is 12 sec. What will be the time (in min) to reduce 10^{10} spores to one by heating at 121^0C ?

   (b) The D_{121} and Z values for *C.botulinum* spores in canned food are 0.2 min and 10^0C, repectively. Find out the total time required (in min), to reduce the spores from 10^2 to 10^{-6} at 111^0C?