

- (c) The production schedule at the break-even p - int.
8. (a) What do you mean by microbial spoilage of foods?
(b) How do you prevent microbial contamination in a food processing industries?
(c) What is the importance of HACCP management system in food manufacturing unit?
9. Write short notes on : (Any Four)
- (a) PFA & FPO
(b) Rancidity & antioxidants.
(c) Plant Cleaning System.
(d) Preventive maintenance.
(e) Layout for plant operation.
(f) Canning of food products.

—————x—————

BACHELOR OF TECHNOLOGY (FTBE) EXAMINATION, 2009
(3rd Year, 2nd Semester)

PLANT OPERATION, MAINTENANCE & SAFETY

Time : Three hours

Full Marks : 100

Use separate Answer-Script for each part.

PART – I

Answer any **three** questions.

Question no.1 is compulsory.

All Questions carry equal marks.

1. (a) How will you proceed to construct a flow chart which will be a very useful tool in Hazard analysis.
(b) Discuss the importance of quality probab :-
City relationship with a diagram.
2. Write short notes on (any two)
- (i) Safety precautions against fire in food factory.
(ii) Application of Total Quality Management in food industries, its benefit with special reference to the standard specifications as formulated by different agencies.
(iii) Application of Instrumentation Techniques in distillery industry to produce better quality product.

[TURN OVER]

(2)

3. How will you construct the Process Flow Chart which is a very useful tool in Hazard Analysis, which is a way of Summarising Food Processing Operation, taking consideration of the following steps. a) Collection of relevant documentation, b) Assessing the process for hazards., c) Control of the hazards.
4. You are interested to establish ISO 9000 Quality system and HACCP in a dairy industry for remarkable improvement in the quality of the products. What should be the efforts to be undertaken – Starting from Operations & Maintenance of Plant & Machineries, Selection of raw materials, Maintenance of Hygienic practice, assessment of Quality of Finished products, effects of introduction of Management System as well as incorporation of Training & Awareness programmes.

PART – II

Answer any **three** questions.
All Questions carry equal marks.

5. Define the two most common fault modelling techniques. What is Preventive Failure? Discuss it with some example.
Is there any relationship between safety and Reliability? If yes, discuss the some in brief.
6. Define the general procedure for determining optimum

(3)

condition for following cases.

- (i) Procedure with one variable
- (ii) Procedure with two or more variables.

The following relationship shows the effect of the variables x and y on the total cost for a particular operation.

$$C_T = 2.33x + \frac{11900}{xy} + 1.86y + 10$$

Determine the values of x and y which will give the least total cost.

7. Define the followings

- (i) Operating cost.
- (ii) Organization cost

Prove the following

$$P_O = \left(\frac{Q_c}{nm} \right)^{\frac{1}{n+1}}$$

Where above notation carry their usual meaning.

A plant produces Refrigerator at the rate of Print/day. The variable costs per refrigerator have been found to be \$ 47.73 + 0.1P¹⁻². The total daily fixed charges are \$ 1750, and all other expenses are constant at \$ 7325/day. If the selling price/refrigerator is \$ 173, determine (a) The daily profit at a production schedule giving the minimum cost per refrigerator.
(b) The daily profit at a production schedule giving the maximum daily profit.

[TURN OVER]

