

Plant Operation, Maintenance and Safety Time : Three hours Full Marks : 100

Use separate Answer- Script for each part

Part I (50 Marks)

Answer question 1 and any two from the rest

1. Explain the following 4X5 = 20
 - a) HAZOP criticality analysis
 - b) risk assessment and risk analysis of a technical system
 - c) sources for biological hazards for food industry
 - d) event tree analysis

2. a) what is HAZOP? State the steps involved in HAZOP study 2+5
 - b) Comment on the following HAZOP terminology:
operating steps, process parameter, deviations, causes 4X2

3. a) Explain the strengths and weaknesses of HAZOP study 8
 - b) Machine A has a first cost of Rs 10000 and the annual estimated operating disbursements are fuel Rs 5000, labour Rs 7000, insurance 1% of the first cost, supervision Rs1500, floor space Rs 500. Machine B has a first cost of Rs 8000, and the annual operating disbursements are fuel Rs 6800, labour Rs 7000, insurance 1% of first cost, supervision Rs 1500, floor space Rs 600. The life of each is expected to be 5 years with 10% salvage value. The minimum required rate of return is 12%. Which machine will you recommend for purchase?
Given; (A/P, 12%,5 yrs) is 0.2774 7

4. Write short notes on (any 3): 3X5= 15
 - a. safety color code
 - b. preventive maintenance model
 - c. fault tree analysis
 - d. preventive maintenance policy

[Turn over

EX/ FTBE / T / 422B /2017

BACHELOR OF ENGINEERING IN FOOD TECHNOLOGY &

BIOCHEMICAL ENGINEERING EXAMINATION, 2017

(Final Year – Second Semester)

PLANT OPERATION, MAINTENANCE & SAFETY

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PART-III(50 Marks)

(Answer any Four questions. All questions carry equal marks.)

1. Discuss the main features of process management highlighting the areas of your choice.
2. Discuss the production strategies for multipurpose plant using formulation of cost equations.
3. What are the challenges and opportunities in to-day's environment to implement strategic actions and IT enabled services in transforming plant operations to achieve optimum manufacturing costs ?
4. How would you control the hazards through preventive measures in a food and drink manufacturing plant ?
5. What do mean by structure of system? With a suitable example explain the importance of the term in a process engineering.
6. How would you control a process if it continuously responds to unpredictable deviations from its average conditions?
7. Discuss the steps to reduce preventive maintenance costs on food processing plants.
8. What are the steps to be followed during inspection of a plant for major hazard analysis in emergency?