

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS- 2024

B.Tech-VIII Semester (BT)

COURSE CODE(CREDITS): 21B1WBT831
COURSE NAME: Food Processing and Engineering

MAX. MARKS: 25

COURSE INSTRUCTORS: Dr Anil Kant

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory. (b) Marks are indicated against each question in square brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.1 Do any three of following questions

[2x3=6.] Co-II, IV

- Enlist at least five specific example of utilization of steam in food processing industry wrt i) thermal processing ii) drying iii) Pasteurization and sterilization and sanitation of processing equipments
- Let you are assigned to choose a boiler for an industrial unit. List at least six discrete points on which you will decide upon choice of a boiler?
- Enlist and Explain different classes of boiler on the basis of i) tube content ii) tube position ii) Furnace position iv) Water circulation v) operating pressure
- Why maintenance of boiler and boiler house should be of paramount importance in a production unit. Mention the key safety guidelines need to be complied with for safety?

Q.2

[2.5x2 = 5] CO II, III

- Mention two key physical properties that are responsible for the most advantage of size reduction of the raw material in the food processing industry. Enlist advantages of size reduction.
- Write down the equation of crushing efficiency and elaborate various parameters in it. Mention two discrete points which are attributed to low crushing efficiency in most grinding operations.

Q.3

[3x2=6] Co-III,IV

- Discuss the specific location and function of following components in the boilers? i) air preheater ii) Economiser iii) Radiant and convective evaporator iv) Circulation pump and distributing header
- Discuss type, design, different components and mounting and working of Cochran boiler. Draw a labeled diagram.

Q.4

[4x2 = 8] CO II, III, IV

- What do you understand by co-current and counter-current flow conditions in a heat exchanger? Discuss important points of temperature profile during these flow conditions.
- Describe the design features of any three following heat exchangers. Draw suitable diagrams with labels to explain design i) scraped surface heat exchanger for continuous operation ii) 1-2 Heat exchanger iii) Plate heat exchanger, iv) Vessels with internal of external heating/cooling coils