

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -3 EXAMINATIONS-2022  
B.Tech-VIII Semester (BT)

COURSE CODE (CREDITS):21B1WBT831(3)

MAX. MARKS: 35

COURSE NAME: Food Processing and Engineering

COURSE INSTRUCTORS: Dr. Anil Kant

MAX. TIME: 2 Hours

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.  
Use of a calculator is allowed.*

Q.1

[4x3=12] CO IV

- Size reduction in the food processing results in increase in the surface area of the ingredients which offer a number of advantages. Justify by giving suitable arguments across the industry.
- Energy required to reduce particles from a mean diameter of 1cm to 0.3cm is 10 kJ kg<sup>-1</sup>. Estimate the energy requirement to reduce the same particles from a diameter of 0.1 cm to 0.01 cm assuming: (a) Kick's Law, (b) Bond's Equation.
- In most simple size separation equipment, force of gravity is the main driving force. However, equipments have been designed for better efficiency and output. Discuss the design elements, working and applications of equipment in the food processing industry in which a) Gravitational force is supplemented with some additional force b) Contribution of gravitational force is insignificant.

Q2

- Demonstrate the importance of Koji in soybean and rice based fermentation. Identify and elaborate on the steps involved in Koji manufacturing? Figure out the difference between Koji and Tane koji. [4]CO II
- Let you work as a biotechnologist to improve the koji mold strains. Which characteristic you would be looking for is selection of efficient strains. Justify your choice of trait with one supporting argument. [2]CO II
- Let you are asked to reduce the fermentation time of Soya sauce. What steps will you take to do it? Give reason in support of your answer. [2]CO II

Q.3

- Tempeh is generally bland in taste. Let you are asked as process engineering to prepare Tempeh for the Indian market? Discuss its manufacturing process along with a few modifications to make it more tangy and spicy. In your opinion what is most important advantage of tempeh compared to other soybean fermented products you studied. [5] CO II, III
- Figure out the compounds which impart characteristic taste and flavors including umami to soy sauce and their nature of contribution. [3] CO II

Q.4

- What would be the effect of the following added ingredient in bread dough? a) cysteine b) ascorbic acid c) gluten. Let the flour is deficient in protein involved in formation of cross linking structure in dough. Which of the two above-mentioned ingredients can be used to improve dough structure? Give a reason? [4]CO III
- Identify role of any of two following unit operations in fruit or vegetable processing a) Exhausting b) Blanching c) Syruping [3]CO IV