

Total number of printed pages: **Programme (PG)/2nd /PFET2111**

2024

UTILIZATION OF FOOD INDUSTRY BYPRODUCTS

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer any five questions.

1. Briefly write about food waste valorization to biofuel production 20
2. a) How by-products from sugarcane industry can be utilized for fermentative production of ethanol? 13
b) What is pectin? Write its extraction from fruit waste. 2+5
3. a) Write extraction methods for separation of azeotrope ethanol-water mixture to get anhydrous alcohol? 10
b) Write briefly potential examples of different value-added products from fruit and vegetable processing industry by-products. 10
4. a) Discuss saccharification and fermentation process for vinegar production from food industry by-products with all biochemical reaction steps. Mention commercial application of furfural. 15+5
5. How food processing industry by-products can be transformed into production of dietary, functional and novel fiber? 20
6. a) What is specialty about Moringa ? Write the steps for production of Moringa-fruit product. 10
b) Immobilized Lactase is used to hydrolyze lactose from dairy waste to produce glucose and galactose. The enzyme is immobilized in resin particles and packed in to 0.5 m³ Plug flow column reactor. The effectiveness factor is close to unity, Km is 1.32 kg/m³ and VMax is 45 kg/m³.h. The lactose concentration in feed stream is 9.5 kg/m³ and 99% substrate conversion is desired. Calculate at what flow rate should the reactor be operated? 10
7. How different agricultural wastes are utilized to produce paper/board/packing materials? 20