Ref. No. : Ex/FTBE/PE/B/T/413A/2024

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FOURTH YEAR**

**FIRST SEMESTER – 2024**

**Subject : WASTE VALORIZATION OF FOOD & BIOCHEMICAL PROCESSES**

**Time: 3hr** **Full Marks: 70**

**Part I (Total Marks 50)**

**Instructions : Use Separate Answer scripts for each part**

Answer any **five** questions from the following: 5x10=50

1. What are the different extraction processes used for extraction of color from its natural sources? What are the problems associated with the natural dyes in industrial point of view?

5+5=10

2. What type of coffee by products are obtained from coffee waste and how they are having health beneficiary effect? 3+7=10

3. Briefly write about how the following waste materials are valorized? 5+5=10

i. Milk mineral products

ii. Ghee residue

4. Write the utility of Poultry offal and poultry litter as a valorized product? 5+5=10

5. Name any two important component isolated from Shellfish industry waste and mention its use. 5+5=10

6. i. What is gelatin? How it is used in food and pharmaceutical industry?

ii. What is the importance of animal blood and how it is utilized as a valorized product? 5+5=10

7. Mention the methods used for tea waste disposal. Mention five examples of agro waste as a source of natural dye. 5+5=10

[ Turn over

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# B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING
# FOURTH YEAR FIRST SEMESTER EXAM 2024

## WASTE VALORIZATION OF FOOD & BIOCHEMICAL PROCESSES

**Full Marks: 100** **Time: 3 hrs**

### Part-II

### Group-A

**Answer any one question** **5×1 = 5**

1. What is the basic composition of fruit and vegetable waste? Define synbiotic. 3+2 = 5
2. What is the basic composition of pectin? What is pectin grade? 3+2 = 5

### Group-B

**Answer any three questions** **15×3 =45**

3. Write different applications of pectin. Briefly describe the pectin extraction and purification method from agricultural waste. Write applications of prebiotics. 4+7+4 = 15
4. What are the different sources of essential oils? Write the applications of essential oils. Briefly different extraction methods of essential oils from agricultural waste. 3+5+7 = 15
5. Define probiotics and prebiotics. What are the different sources of prebiotics? What are the selection criteria for probiotics? Write different preservation methods of probiotics. 4+4+3+4 = 15
6. Write the applications of lactic acid. Briefly describe lactic acid production methods from agricultural wastes. 5+10 = 15
7. What is biorefinery concept? Apply biorefinary concept for separation of valuable components from orange peel. 3+12 = 15