

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

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

Subject : WASTE VALORIZATION OF FOOD & BIOCHEMICAL PROCESSES

Time: 3hr

Full Marks: 100

Part I (Total Marks 50)

Instructions : Use Separate Answer scripts for each part

Answer any five questions from the following:

5x10=50

1. (a) What is the importance of animal blood and how it is utilized? 2+3=5
(b) What is gelatin? How it is used in food and pharmaceutical industry? 1+4=5
2. Describe how animal glands and organs are utilized. What are the nutritive value of meat by products and what are the drawbacks of meat by products? 5 +2+3=10
3. What type of waste material are excreted from poultry industry? What are the uses of poultry feather- explain with example. 5+5=10
4. What is gelatin? Mention two applications each of gelatin in food and pharmaceutical industries. Mention any three problems associated in the production and utilization of dairy by products in India. Write two health benefits of coffee by products. (1+2+2)+(3+2)=10
5. Mention two value added products obtained from tea waste. Mention three ways of utilizations of poultry waste. What is the source of glucosamine hydrochloride and its medicinal use? (2+3)+(3+2)=10
6. What are the different processes to extract color from plantation product waste? Mention the problems of natural dye from an industrial point of view. 5+5=10

[Turn over

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FOURTH YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2024**

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Time: 3hrs

Full Marks: 100

Part-II

Use Separate Answer scripts for each Part

Group-A

Answer any one question

1×5 = 5

1. Give three examples of antioxidants present in agricultural wastes. How beta-carotene extracted from carrot waste? 2+3 = 5
2. Write the applications of natural pigments present in waste. Describe the extraction process of any one pigment from agricultural waste. 2+3 = 5

Group-B

Answer any three questions

3×15 = 45

3. What are the structural composition and source of pectin? Write the applications of pectin in different industries. Briefly describe the pectin extraction and purification methods from agricultural waste. 4+5+6 = 15
4. What are the sources of essential oils? Write the applications of essential oils. Briefly describe the extraction methods of essential oils from natural sources. 2+4+9 = 15
5. Write the applications of citric acid. Briefly describe the fermentative production and purification of citric acid. 4+11 = 15
6. What is the basic composition of agricultural waste? How simple sugars be produced from agricultural waste for alcohol fermentation? Write the applications of lignin. 2+10+3 = 15
7. Write the industrial applications of ethanol. Briefly describe the alcohol fermentation process. What is alcohol fermentation efficiency? 3+10+2 = 15