

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FOURTH YEAR  
SECOND SEMESTER – 2022**

**Subject : FOOD BIOTECHNOLOGY**

**Time : 4 hr**

**Full Marks : 70**

**Part- I (35 Marks)**

**Use Separate Answer scripts for each Group**

**Answer any five questions:**

**7x5=35**

1. What are the basic principles in gene technology to produce a genetically modified organism? How gene technology can be used in agriculture and food production? 3+4=7
  
2. With example explain how genetic modification can be used in extension of shelf life and development of value-added food. 3.5+3.5=7
  
3. What are the tools and steps in rDNA technology? Explain with a diagram. 1+2+4=7
  
4. What are the safety factors related to the consumption of SCP? What are the factors on which production of SCP from waste material is dependent? 4+3=7
  
5. What is cloning? What are the needs for cloning? Is cloning a boon of science-Justify. 1+2+4=7
  
6. Fermented food has therapeutic value and easy to digest-justify. What are the drawbacks in the process of animal cloning? 3+4=7
  
7. With a flowsheet explain the method of preparation of any one cereal/legume/fruit based fermented food and explain how its nutritional value has been improved by the process of fermentation? 5+2=7

[ Turn over

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**FOOD BIOTECHNOLOGY**

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**PART:II**

**Group A**

**Answer any one question**

**5×1 = 5**

1. Briefly describe the HFCS production process.
2. Write the applications of fat replacers.

**Group-B**

**Answer any two questions**

**15×2 = 30**

3. Write the applications of modified carbohydrates in food processing. Briefly describe different biotechnological processes for carbohydrate modifications. 5+10 = 15
4. Write a short note on trans-esterification. What are the different applications of trans-esterified fats in food and biochemical industries? What are the hurdles during trans-esterification process? 5+5+5 = 15
5. What are the advantages of protein modifications? Shortly describe different protein modification processes. 6+9 = 15