**Short Answer questions**

1. What is fermentation?
   Fermentation is a biochemical process where microorganisms convert food substrates into stable and useful products.
2. Name the main groups of microorganisms involved in fermentation.
   Bacteria, yeasts, and moulds.
3. Which bacteria are most important in fermented foods?
   Lactic acid bacteria such as *Lactobacillus*.
4. What is the role of *Acetobacter* in fermentation?
   It converts alcohol into acetic acid.
5. Which yeast is commonly used in bread and alcohol production?
   *Saccharomyces cerevisiae*.
6. What is kimchi?
   A traditional fermented vegetable dish from Korea.
7. What is sauerkraut made from?
   Fermented cabbage.
8. What is sinki?
   A fermented radish product prepared by pit fermentation.
9. Which microorganism is used in natto production?
   *Bacillus subtilis*.
10. What mould is used in miso production?
    *Aspergillus oryzae*.

**Short Notes**

1. **Write a short note on fermentation and its importance.**

Fermentation, chemical process by which molecules such as glucose are broken down anaerobically. More broadly, fermentation is the foaming that occurs during the manufacture of wine and beer, a process at least 10,000 years old. The frothing results from the evolution of carbon dioxide gas, though this was not recognized until the 17th century. French chemist and microbiologist Louis Pasteur in the 19th century used the term fermentation in a narrow sense to describe the changes brought about by yeasts and other microorganisms growing in the absence of air (anaerobically); he also recognized that ethyl alcohol and carbon dioxide are not the only products of fermentation.

**2. Explain the role of microorganisms in fermentation**

Microorganisms play a crucial role in fermentation, driving the conversion of sugars into various products. Their roles include: 1. Conversion of sugars: Microorganisms like yeast and bacteria convert sugars into alcohol, acids, or gases through metabolic processes.

2. Production of enzymes: Microorganisms produce enzymes that break down complex molecules into simpler compounds, facilitating fermentation.

3. Creation of flavor and aroma compounds: Microorganisms produce volatile compounds, contributing to the flavor and aroma of fermented products. 4. Preservation: Microorganisms create an environment that inhibits the growth of harmful bacteria, preserving the fermented product.

5. Nutrient enhancement: Microorganisms increase the bioavailability of nutrients in fermented foods, enhancing their nutritional value.

6. Production of bioactive compounds: Microorganisms produce bioactive compounds like antibiotics, antioxidants, and antiinflammatory agents.

7. Degradation of toxins: Microorganisms can degrade toxins and allergens, improving food safety.

8. Improved texture and consistency: Microorganisms can modify the texture and consistency of fermented products, like yogurt and cheese.

Microorganisms are the driving force behind fermentation, transforming raw materials into valuable products with unique flavors, textures, and nutritional profiles.