

B.A. / B.Com. / B.Sc. (NEP) Semester-II
SEC50 - Biotechnology - Fermentation Technology

P. Pages : 3

Time : Two Hours



GUG/S/25/16441S

Max. Marks : 40

1. Multiple Choice Questions (MCQs).

- 1) Which technique is used to separate fermentation products based on size using a semi-permeable membrane?
 - a) Centrifugation
 - b) Membrane filtration
 - c) Precipitation
 - d) Chromatography
- 2) What is the main purpose of a fermenter in industrial fermentation?
 - a) To store microbial cultures
 - b) To provide optimal conditions for microbial growth
 - c) To sterilize culture media
 - d) To kill unwanted microbes
- 3) Which of the following is a key component of a fermenter?
 - a) pH probe
 - b) Thermometer
 - c) Agitator
 - d) All of the above
- 4) Which scientist is credited with discovering the role of microorganisms in fermentation?
 - a) Robert Koch
 - b) Louis Pasteur
 - c) Alexander Fleming
 - d) Joseph Lister
- 5) Which of the following is a commonly used carbon source in fermentation media?
 - a) Ammonium sulfate
 - b) Glucose
 - c) Magnesium sulfate
 - d) Sodium chloride
- 6) What is the process of selecting microorganisms with industrial importance called?
 - a) Mutation
 - b) Screening
 - c) Fermentation
 - d) Precipitation
- 7) Which method is used to preserve industrially important microorganisms for long-term use?
 - a) Drying
 - b) Chromatography
 - c) Cryopreservation
 - d) Centrifugation
- 8) Which process is used to break microbial cells for product extraction?
 - a) Filtration
 - b) Cell disruption
 - c) Precipitation
 - d) Centrifugation
- 9) What is the primary purpose of buffers in fermentation media?
 - a) Maintain pH stability
 - b) Provide carbon source
 - c) Increase oxygen availability
 - d) Act as a nitrogen source

- 10) Which method is commonly used for the removal of microbial cells after fermentation?
- a) Filtration
 - b) Distillation
 - c) Membrane separation
 - d) Cryopreservation
- 11) What is the function of growth factors in fermentation media?
- a) They act as energy sources
 - b) They help in microbial metabolism and growth
 - c) They act as pH stabilizers
 - d) They inhibit microbial growth
- 12) Which assay method is used to detect fermentation products biologically?
- a) Physical assay
 - b) Chemical assay
 - c) Biological assay
 - d) Spectrophotometry
- 13) Why are antifoaming agents added to fermentation media?
- a) To increase foam formation
 - b) To prevent excessive foaming
 - c) To act as a nitrogen source
 - d) To sterilize the fermenter
- 14) What is the primary function of nitrogen sources in fermentation?
- a) Providing energy
 - b) Providing amino acids and proteins
 - c) Acting as a catalyst
 - d) Inhibiting microbial growth
- 15) Which of the following is a common nitrogen source in fermentation media?
- a) Corn steep liquor
 - b) Sucrose
 - c) Ethanol
 - d) Carbon dioxide
- 16) What is the first step in scaling up fermentation?
- a) Product purification
 - b) Inoculum preparation
 - c) Cell disruption
 - d) Filtration
- 17) Which type of fermentation involves controlled addition of nutrients during the process?
- a) Batch fermentation
 - b) Fed-batch fermentation
 - c) Continuous fermentation
 - d) Solid-state fermentation
- 18) Which fermentation process allows continuous removal of products and addition of fresh nutrients?
- a) Batch fermentation
 - b) Fed-batch fermentation
 - c) Continuous fermentation
 - d) Submerged fermentation
- 19) Which type of fermentation uses solid substrates with little or no free water?
- a) Batch fermentation
 - b) Solid-state fermentation
 - c) Fed-batch fermentation
 - d) Continuous fermentation
- 20) What is the primary advantage of solid-state fermentation?
- a) It requires high water content
 - b) It is more economical for certain industries
 - c) It produces fewer metabolites
 - d) It requires continuous stirring

2. Short answer question.

- 1) Which assay method is used to detect fermentation products biologically?
- 2) What is the purpose of buffers in fermentation media?
- 3) What is the primary function of a fermenter's agitator?
- 4) Which fermentation method operates without adding fresh nutrients during the process?
- 5) Which ancient process involves microbial conversion of substrates into useful products?
- 6) Which technique is used to separate microbial cells from the fermentation broth?
- 7) What is the first step in scaling up fermentation?
- 8) What is added to prevent excessive foam formation in fermentation?
- 9) Which type of fermentation allows controlled addition of nutrients?
- 10) Which fermentation technique uses solid substrates without free-flowing liquid?
- 11) What is the main vessel used for large-scale fermentation?
- 12) Which component in fermentation media provides carbon for microbial growth?
- 13) Which gas is commonly supplied in aerobic fermentation?
- 14) What is the role of nitrogen sources in fermentation media?
- 15) What is the process of selecting microorganisms with industrial importance called?
- 16) What type of fermentation continuously removes and adds nutrients?
- 17) Which technique is used to preserve industrially important microorganisms for long-term use?
- 18) Who discovered the role of microorganisms in fermentation?
- 19) Which process is used to break microbial cells for product extraction?
- 20) Which method separates fermentation products based on size using a semi-permeable membrane?
