

Printing Pages : 2

Paper Code: B080602T

B

(SVSU:2024-25/R)

Enrollment No.

B.Sc. Biotechnology/Microbiology/Biochemistry

VI Semester / 3rd Year Examination

Subject Code—B080602T

Subject Name— Industrial Microbiology

[Time : 03:00 Hours]

[Max. Marks : 75]

Note: 1. Attempt all the questions as per given instructions.**1. Multiple Choice Questions (MCQs)****[01×15=15]**

- I** What is the main advantage of enzyme immobilization in industrial processes?
- a) Increased enzyme consumption b) Decreased enzyme activity
c) Reusability of enzymes d) Requirement for harsh conditions
- II** Which microorganism is employed for the commercial production of vitamin B12?
- a) *Propionibacterium shermanii* b) *Lactobacillus bulgaricus*
c) *Aspergillus oryzae* d) *Rhizobium leguminosarum*
- III** Which type of bioreactor is commonly used for large-scale aerobic fermentation?
- a) Fixed bed reactor b) Airlift reactor
c) Fluidized bed reactor d) Stirred tank reactor
- IV** Which microorganism is commonly used in the industrial production of citric acid?
- a) *Escherichia coli* b) *Aspergillus niger*
c) *Saccharomyces cerevisiae* d) *Penicillium chrysogenum*
- V** Which of the following microorganisms is commonly used in the production of penicillin?
- a) *Escherichia coli* b) *Penicillium chrysogenum*
c) *Saccharomyces cerevisiae* d) *Aspergillus niger*
- VI** In which type of bioreactor is mixing achieved by gas (usually air) rather than mechanical agitation?
- a) Stirred-tank bioreactor b) Air-lift bioreactor
c) Fluidized-bed bioreactor d) Rotating drum bioreactor
- VII** One disadvantage of immobilized enzymes compared to free enzymes is:
- a) Higher reaction rate b) Limited mass transfer
c) Greater sensitivity to pH changes d) Increased solubility
- VIII** Which bioreactor is particularly suitable for immobilized cell systems?
- a) Stirred-tank bioreactor b) Photobioreactor
c) Packed-bed bioreactor d) Air-lift bioreactor
- IX** Which of the following is a secondary metabolite produced during fermentation?
- a) Ethanol b) Lactic acid c) Penicillin d) Carbon dioxide

- X Which of the following is NOT a common method of enzyme immobilization?
a) Adsorption b) Covalent bonding c) Encapsulation d) Denaturation
- XI In a typical fermentation process, the lag phase refers to:
a) The period of maximum cell growth
b) The phase where nutrients are exhausted
c) The initial phase where microbes adapt to the new environment
d) The phase where fermentation products are harvested
- XII Which of the following bioreactors is most commonly used for large-scale aerobic fermentation?
a) Air-lift bioreactor b) Stirred-tank bioreactor
c) Packed-bed bioreactor d) Photobioreactor
- XIII The process of converting glucose to ethanol by yeast is an example of:
a) Aerobic respiration b) Anaerobic fermentation
c) Photosynthesis d) Oxidative phosphorylation
- XIV Which of the following is used in the microbial production of ethanol?
a) *Lactobacillus acidophilus* b) *Saccharomyces cerevisiae*
c) *Pseudomonas putida* d) *Clostridium botulinum*
- XV Which support material is commonly used for enzyme immobilization?
a) Ethanol b) Calcium alginate c) Hydrochloric acid d) Acetone

2. Answer in long (any three)

[10×3=30]

- I Discuss the various techniques used for the enrichment and selective isolation of microbial strains used in industrial fermentation.
- II What is Down-stream processing? Explain the significance of downstream processing in bioprocessing.
- III What are bioreactors? Explain the types of bioreactors and Measurements of fermentation parameters.
- IV What is Microorganism? Explain the role of the Microorganism in production of Citric acid and Glutamic acid.

3. Answer in short (any six)

[6×5=30]

- I Give short notes on Microbial production of industrial products Protease and Lipase.
- II Describe the Method of Enzyme immobilization in Industrial Microbiology
- III Describe the types of Fermentation Process.
- IV Write short note on types of Bioreactors.
- V Write a short note on cell disruption in Down-stream processing.
- VI Write short note on beer Production.
- VII What are differences between in cornsteep liquor and sulphite waste liquor?
- VIII What are differences between in glucose isomerase and Penicillin acylase in enzyme immobilization?

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Paper Code: B100602T

C

(SVSU:2024-25/R)

Enrollment No.

Program Name B.Sc. Biotechnology

VI Semester / III Year Examination

Subject Code B100602T

Subject Name Food Biotechnology

[Time : 03:00 Hours]

[Max. Marks : 75]

Note: 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) [01×15=15]
 - I Milk is converted into milk powder by-
(a) Bottling (b) Canning (c) Vacuum drying (d) Dehydration
 - II Which of the following is an edible fungus?
(a) Mucor (b) Agaricus (c) Rhizopus (d) Coprophilous
 - III Which preservation method involves sealing food in airtight containers and heating them to destroy microorganisms?
(a) Pickling (b) Fermentation (c) Canning (d) Salting
 - IV Kombucha is beneficial for _____ patients.
(a) High blood pressure (b) Cardiac
(c) Low blood pressure (d) Diabetes
 - V What is the purpose of blanching in canning?
(a) To remove food impurities (b) To kill harmful bacteria
(c) To soften the food texture (d) To deactivate enzymes
 - VI What is the full form of FSSAI?
(a) Food Safety and Standard Authority of India
(b) Food Supplement and Standard Authority of India
(c) Food Safety and Safety Authority of India
(d) Food Safety and Supplement Authority of India
 - VII Common food poisoning microbes are:
(a) Clostridium (b) E.coli (c) Salmonella (d) Both a & c
 - VIII The enzyme which hydrolyses starch to maltose is:
(a) Protease (b) Amylase (c) Lactase (d) Maltase
 - IX Adulteration of milk starch can be detected by _____ test?
(a) Platform test (b) Reduction test (c) Alcohol test (d) Iodine test

- X What is the primary purpose of food preservation?
(a) To increase food weight (b) To extend the shelf life of food
(c) To enhance food flavor (d) To reduce food nutrients
- XI At what temperature milk is typically pasteurized?
(a) 100 degree (b) 60 degree (c) 72 degree (d) 40 degree
- XII Process of adding vitamins to milk is:
(a) Flavoring (b) Fortification (c) Fermentation (d) Sterilization
- XIII Which among the following is a vegetable based fermented product?
(a) Vinegar (b) Yoghurt (c) Sauerkraut (d) Soy Sauce
- XIV Clostridium perfringens poisoning is associated with:
(a) Meat products (b) Canned food (c) Fish products (d) Vegetables
- XV The enzyme used in tenderization of meat is:
(a) Amylases (b) Lipase (c) Glucose oxidase (d) Papain

2. Answer in long (any three) [10×3=30]

- I What are soy products? Discuss fermentation of soy products in detail.
- II What are endogenous enzymes? Discuss the role of endogenous enzymes in various foods.
- III What is food adulteration? Give an account on prevailing food standards in India?
- IV What is microbial and non-microbial food spoilage? How it can be controlled? Explain in detail.

3. Answer in short (any five) [6×5=30]

- I Write the causative agent, symptoms and control measures of Cholera.
- II Discuss various factors of food spoilage.
- III Write a short note on fermented pickles.
- IV What is dehydration and pasteurization of milk?
- V Write a note on nutritional labelling of food in India.
- VI What is food preservation? Discuss in brief.
- VII Discuss food fortification and enrichment.
- VIII Write a note on food borne intoxications.