
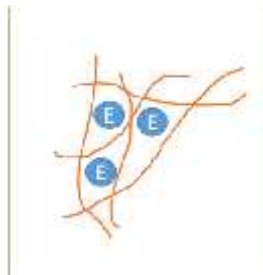


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES			
End Semester Examination, May 2023			
Course: Industrial Microbiology		Semester : IV	
Program: B.Sc Microbiology		Duration : 3 Hours	
Course Code: HSMB2008		Max. Marks: 100	
Instructions: Read all questions carefully			
S. No.	Section A	Marks	COs
	Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)		
Q 1	Which of these is NOT a product of fermentation? (A) Lactate (B) Oxygen (C) Carbon dioxide (D) Ethanol	1.5	CO1
Q 2	The type of fermentation observed in yeasts is (A) Acrylic fermentation (B) Lactic acid fermentation (C) Pyruvic fermentation (D) Alcoholic fermentation	1.5	CO1
Q 3	One of the most commonly used fermented cereal amongst these is (A) Wheat (B) Bread (C) Rice (D) Yoghurt	1.5	CO1
Q 4	Microorganisms used in fermentation technology shall not_____? (A) Grow rapidly in cheap culture medium (B) Readily manipulated (C) Pathogenic (D) All of the above	1.5	CO1
Q 5	Which of the following method is not used in isolation and screening of desired microorganisms? (A) Crowded plate technique (B) Auxanographic technique (C) Enrichment culture technique (D) Hanging drop technique	1.5	CO2
Q 6	Which of the following is NOT a carbon source? (A) Blackstrap molasses (B) Corn molasses (C) Beet molasses (D) Yeast extract	1.5	CO2
Q 7	Which of the following procedure has a great application in strain improvement? (A) rDNA technology (B) Conjugation (C) Transformation (D) Transduction	1.5	CO2
Q 8	The preservation by liquid nitrogen is called as _____? (A) Cryopreservation (B) Lyophilization (C) Freeze-drying (D) Desiccation	1.5	CO2

Q 9	The heat control at large-scale in the fermenter is carried out by _____ ? (A) Inter heating coils (B) Heating jacket (C) Controlled bath (D) Cold-water circulation	1.5	CO3
Q 10	Which of the following is not the component of aeration and agitation system? (A) Impeller (B) Baffles (C) Sparger (D) Thermometer	1.5	CO3
Q 11	The Batch fermenter is a/an _____ culture system? (A) Open (B) Closed (C) Isolated (D) Semi-closed	1.5	CO3
Q 12	Which growth phase is usually longer in continuous culture? (A) Lag (B) Log (C) Stationary (D) Death	1.5	CO3
Q 13	The large holes in the cheese are due to _____? (A) Oxygen production (B) Carbon dioxide production (C) Sulfur dioxide release (D) Lead dioxide release	1.5	CO4
Q 14	Which of the following is the most common method for citric acid production? (A) Solid-state fermentation (B) Submerged fermentation (C) Surface fermentation (D) Surface adhesion fermentation	1.5	CO4
Q 15	Which of the following parameter increases the yield of alpha amylase? (A) Temperature (B) pH (C) Mutation (D) Buffer	1.5	CO4
Q 16	Which of the following process encourages grain germination? (A) Malting (B) Milling (C) Mashing (D) Boiling	1.5	CO4
Q 17	Which of the following is not a method of immobilization? (A) Entrapment (B) Ionic bonding (C) Adsorption (D) Encapsulation	1.5	CO5
Q 18	Which of the following method does NOT require support/matrix material? (A) Cross-linking (B) Entrapment (C) Adsorption (D) Covalent bonding	1.5	CO5
Q 19	Which of the following is a disadvantage of an immobilized enzyme? (A) Immobilization process allows a continuous process (B) Immobilization means additional cost (C) Increase productivity (D) Immobilization prevents loss of activity	1.5	CO5

Q 20	<p>The following diagram represents _____ method of immobilization.</p>  <p>(A) Covalent binding (B) Adsorption (C) Entrapment (D) Membrane confinement</p>	1.5	CO5
<p>Section B (4Qx5M=20 Marks)</p>			
Q 1	Differentiate between aerobic and anaerobic fermentation?	5	CO1
Q 2	State the application of MacConkey Agar media as differential media.	5	CO2
Q 3	Evaluate the role of agitation in oxygen transfer.	5	CO3
Q 4	Argue why microbes are preferred in industries for the production of valuable products.	5	CO1
<p>Section C (2Qx15M=30 Marks)</p>			
Q 1	<p>A scientist wants to produce a protease enzyme that should catalyze at lower pH conditions.</p> <p>A. How do you isolate microbes to produce protease enzymes using the methods of isolation, enrichment, screening, and strain improvement?</p> <p>B. Explain the type of fermentation process you would apply for the production of protease enzyme and why?</p>	15	CO2
Q 2	<p>In a wine-producing company, they encounter overproduction of foam during fermentation.</p> <p>A. Explain how would you reduce or clear the foam using chemical or physical measures?</p> <p>B. State the principle and ideal properties of chemicals used for foam clearance in industrial fermentation</p> <p>C. List the examples of different chemicals used for foam clearance</p>	15	CO3

Section D
(2Qx10M=20 Marks)

Q 1	Develop a fermentation process for wine production using apples and describe the steps involved in detail with an illustration.	10	CO4
Q 2	Compare the different methods of enzyme immobilization methods with illustrations and evaluate the pros and cons of each method.	10	CO5