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M.Sc. Sem-III (New Course)
Biotechnology
JULY-SEP- 2021
BT-CC-302 BIOPROCESS AND BIOCHEMICAL ENGINEERING

કુલ સમય :– ૬૦ મીનીટ **કુલ પ્રશ્નો :** ૫૦ **વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો :** ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1. 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
2. The screening is isolation and detection of microorganisms of interest.
   a) True b) False
3. Which of the following method is useful for the isolation and detection of organisms having the ability to produce antibiotics?
   a) Crowded plate technique b) Auxanographic technique
   c) Enrichment Culture technique d) Indicator dye technique
4. The prototrophs are the organisms which are not capable of synthesizing all growth requirements for themselves.
   a) True b) False
5. Which of the following method is useful for detection and isolation of those microorganisms which are capable of growing on a particular nutrient medium?
   a) Crowded plate technique b) Auxanographic technique
   c) Enrichment Culture technique d) Indicator dye technique
6. The Fed-batch culture is a/an _____ culture system.
   a) Open b) Closed c) Isolated d) Semi-closed
7. Who introduced the term “Fed-Batch”?
   a) Burrow et al. b) Bu’Lock et al. c) Yoshida et al. d) Maniatis et al.
8. Which of the following is a type of Fed-Batch culture?
   a) Variable volume b) External Feedback c) Internal Feedback d) Chemostat
9. Which of the following does not include in the range of fermentation processes?
   a) Microbial Enzymes b) Microbial metabolites c) Biotransformation d) Recombinant DNA
10. Which of the following is correct with respect to Fermentation?
    a) A process involving the mass culture of micro-organisms b) It is a fast process
    c) Fermented food products are always healthy d) Oxygen is produced during fermentation
11. Which Growth phase is usually longer in continuous culture?
    a) Log b) Exponential c) Stationary d) Death
12. The chemostat and turbidostat are the types of bioreactors that are used in which of the following culture?
    a) Batch culture b) Continuous culture c) Fed-Batch culture d) Solid State culture
13. Which scientist(s) gave a full kinetic description of external and internal feedback system?
    a) Monod b) Pirt c) Bull d) Harte and Webb
14. What are the disadvantages of continuous culture?
    a) It can rarely be used for other productions b) The growth rate is higher
    c) If contamination occurs, huge volumes of the product may be lost
    d) It is very useful for processes involving the production of primary metabolites
15. Which of the following is not the type of continuous brewing?
    a) Cascade system b) Multistage system c) Tower system d) Extract brewing
16. Which carbon source has great application for SCP production?
    a) Cellulose b) Starch c) Methanol d) Methane
17. The continuous culture or fermentation can be used to produce _____
    a) Biomass b) Primary metabolites c) Secondary metabolites d) Antibodies
18. In World War II, the fermentation was used for the production of _____
    a) Alcohol b) Antibiotics c) Wine d) Beer
19. The small-scale bioreactors have volume of _____
    a) 5-10 litres b) 10-20 litres c) 1-10 litres d) 1-20 litres
20. The bioreactor is not capable of _____
    a) Producing aseptic conditions b) Meeting containment regulations
    c) Controlling pH d) Produce electricity
21. Which of the following fermenters are characterized by height to diameter ratio?
    a) Tower fermenter b) Airlift fermenter c) Hollow fibre d) Perfusion bioreactor
22. In which of the following fermenters the impellers are replaced by the constant flow of gas?
    a) Airlift fermenter b) Tower fermenter c) Hollow fibre d) Perfusion bioreactor
23. Which of the following class of microorganisms causes less threat to a man?
    a) Low-risk microorganisms b) High-risk microorganisms
    c) Medium-risk microorganisms d) Environmental-risk microorganisms
24. What are primary metabolites?
    a) Synthesized during primary phase of cell growth b) Synthesized during secondary phase of cell growth
    c) Synthesized during death phase of cell growth d) Synthesized during growth phase of cell
25. What are secondary metabolites?
    a) Synthesized during primary phase of cell growth b) Synthesized during secondary phase of cell growth
    c) Synthesized during the stationary phase d) Synthesized during growth phase of cell
26. What is the purpose of solute- solute separations and what are the species removed?
    a) Purpose: clarify target species; Removes: culture media, fermentation broth
    b) Purpose: extract target from cells; removes: small molecules, proteins
    c) Purpose: Preserve target species ; Removes: Buffer solutions
    d) Purpose: Fractionate target species; Removes: unrelated solutes ,small molecules.

27. Which of the following process is not employed to distinguish between contaminants and the product based on physiochemical features?
a) Filtration b) Batch adsorption c) Isoatachoporesis d) Crystallization
28. Which of the following is also a process for penicillin recovery?
a) Adsorption on activated carbon b) Direct crystallization c) Degumming d) Distillation
29. What is the use of batch electrophoresis in procedure of purification of bioproduct?
a) It gives high resolution carbohydrates b) It purifies completely
c) It gives high resolution protein content d) The targeted product is concentrated by batch electrophoresis
30. The purpose of aeration is to provide _____
a) The medium to organisms b) The carbon dioxide to organisms
c) The oxygen to organisms d) The water to organisms
31. The Aeration is mainly provided to organisms present in _____
a) Submerged culture b) Solid State culture c) Surface culture d) Batch culture
32. The non-agitated fermentations are carried out in vessels of a height/diameter ratio of _____
a) 1:2 b) 5:1 c) 3:2 d) 4:1
33. Which of the following is not the component of aeration and agitation system?
a) Impeller b) Baffles c) Stirrer gland and bearing d) Thermometer
34. Which of the following agitator consists of vanes in a vertical plane around the circumference?
a) vaned discs b) disc turbines c) variable pitch turbines d) marine propeller
35. Which of the following is not the type of modern agitator?
a) SCABA b) Prochem Maxflo c) Lightning A315 d) New Brunswick Scientific
36. Which of the following is not the use of baffles?
a) Increase the effect of agitation b) Improve aeration efficiency
c) Improve cooling capacity d) Improve the fermenter capacity
37. Which of the following sparger is made of ceramic or metals?
a) Porous sparger b) Orifice sparger c) Nozzle sparger d) Combined sparger-agitator
38. Who developed the combined-agitator sparger?
a) Herbert b) Rivett c) Johnson d) Peterson
39. The use of flat disc in the turbine is to ensure the bulk of energy consumption occurs at blades.
a) True b) False
40. Cellulase is used in which type of industry?
a) Food industry b) Paper industry c) Biofuel industry d) Chemical industry
41. Which of the following is not included in immobilization process?
a) Absorption b) Adsorption c) Entrapment d) Affinity
42. Which of the following is not an upstream process?
a) Selection of a suitable enzyme b) Process development
c) Concentration and primary purification of enzymes d) Large scale production
43. Which type of fermentation is used for large scale manufacturing of enzymes?
a) Solid-state fermentation b) Submerged fermentation
c) Solid-Gas state fermentation d) Gas-state fermentation
44. Which enzyme was first produced industrially?
a) Bacteria enzyme b) Yeast enzyme c) Fungal enzyme d) Streptomyces
45. The production of enzyme is mostly carried out by?
a) Batch fermentation b) Continuous fermentation
c) Fed-batch fermentation d) Semi-batch fermentation
46. Which is the inducer of enzyme invertase?
a) Starch b) Sucrose c) Galactosidases d) Fatty acids
47. What is the method of screening?
a) To improve the microbial strain b) To improve the growth of an enzyme
c) To choose appropriate microorganisms for the desired enzyme
d) To determine the optimum conditions for growth of microbes
48. Which of the following is true for single cell protein?
a) Algae cannot be used in single cell protein b) It is produced through fermentation
c) It does not contain carbohydrates and vitamins d) Its utilization increases environmental pollution
49. In the following equation, what is the unit of Dilution rate"D"? (Given: F = dm^3h^{-1} and V = dm^3)D = F/V
a) dm^3 b) h^{-1} c) dmh^{-1} d) dm^3h^{-1}
50. What do you mean by wall growth in bioreactors?
a) Growth of cells in the wall b) Consumption of paints by the cells from the coated walls
c) Biomass concentration is increased d) Immobilized cells consumes substrate within reactors