

Subject: Pharmaceutical Biotechnology
Sem: TY B Pharmacy (Sem-V) (Choice based)

MCQs

1. Bam HI is obtained from
a. Bacillus stearothermophilus
b. Bacillus amyloliquefaceins
c. H Bacillus globiggi
d. Bacillus subtilis

2. Embryonic stem cells are used in order to ensure that insertion is done at the required chromosomal location and it is called as_____*
a. Gene targeting
b. Knocking out
c. Knocking in
d. Gene disruption

3. RNA polymerase has a single subunit. a. E coli
b. Bacillus subtilis
c. T 7 phage
d. Lambda phage

4. Which of the following is an advantage of batch fermentation
a. More focus on instrumentation due to frequent sterilization
b. More expenses are required for subcultures for inoculation, labour and process control
c. Less risk of contamination or cell mutation because of short growth period
d. low productivity due to the time required for sterilizing, filling, cooling, emptying and cleaning

5. Which of the following are the application of bioinformatics
a. Drug designing
b. Precipitation reaction
c. Agglutination reaction
d. Serological testing

6. The antibody that is first formed after infection is
a. IgG
b. IgM
c. IgD
d. IgE

7. Antibody having high valency is
a. IgG
b. IgA
c. IgD
d. IgM

8. Vaccines are substances

- a. Antibody
- b. Antigenic
- c. Antigenic and Antibody
- d. Either Antigenic or Antibody

9. Vaccines that are prepared from killed microbes, they are called as

- a. Inactivated vaccines
- b. Attenuated vaccines
- c. Autogenous vaccine
- d. Anti-toxins

10. The first class of antibodies to appear after exposure to an antigen

- a. IgG
- b. IgA
- c. IgD
- d. IgM

11. Which of the following is a method of immobilization?

- a. Entrapment
- b. Blotting
- c. Electrophoresis
- d. Co-ordinate bonding

12. Which is the joining enzyme

- a. Exonuclease
- b. Endonuclease
- c. Ligase
- d. Polymerase

13. Which of the following is the feature of plant cells?

- a. Genetic recombinations
- b. The cell wall with peptidoglycon
- c. Presence of Plasmids
- d. Consists of Plastids

14. In monoclonal antibodies technology tumor cells that can replicate endlessly are fused with mammalian cells that produce an antibody. The result of this cell fusion is

- a. Natural Killer Cells
- b. Lymphoblast
- c. Myeloma
- d. Hybridoma

15. Which of the following statements is true regarding southern blotting *

- a. Developed by E.M.Southern
- b. DNA-RNA hybridization is the basis
- c. The transfer of RNA fragments from gel to nitrocellulose membrane
- d. Isolation of proteins

16.	Association of DNA and histone is mediated by ____	
a)	Covalent bonding	
b)	Hydrogen bonding	
c)	Hydrophobic bonding	

d)	Vander Waals interactions	
17.	In a Biosensor the bioreceptor cannot be _____	
a)	Enzyme	
b)	Cell	
c)	antigen	
d)	a non-biochemical substance	
18.	Enzyme immobilization is done because	
a)	It protects the enzyme	
b)	It changes the action of the enzyme	
c)	It reduces the rate of the reaction	
d)	It helps the enzyme to mutate	
19.	_____ is used as a monitoring device in the fermenter to measure agitator speed.	
a)	Flow meter	
b)	Rota meter	
c)	Pressure gauze	
d)	Tachometer	
20.	Following bioethics in biotechnology will	
a)	reduce the research work	
b)	increase the research work	
c)	lead to reduction in the number of NCES	
d)	lead to relatively environment friendly experimentation	
21.	Biosensors are developed for	
a)	Detection of an analyte	
b)	Increase the quantity of an analyte	
c)	Increase the rate of an enzymatic reaction	
d)	Mutating a gene	
22.	_____ is the most satisfactory plasma substitute.	
a)	Dextran	
b)	Glucose	

c)	Fructose		
d)	Sucrose		
23.	Northern blotting technique is used to identify_____		
a)	RNA		
b)	Protein		
c)	DNA		
d)	Lipid		
24.	Restriction enzymes are called as		
a)	Molecular glue		
b)	Molecular scissors		
c)	Molecular degraders		
d)	Molecular blockers		
25.	Biotransformations are structural modifications in a chemical compound by_____that leads to the formation of moleculeswith relatively greater polarity.		
a)	Micro-organisms or enzymes		
b)	Virus		
c)	DNA		
d)	RNA		
26.	Which of the following is not the part of upstream fermentation process		
a)	Sterilization of nutrient medium		
b)	Sterilization of the fermenter		
c)	Addition of the microbial culture		
d)	Purification of the final product		
27.	Which of the following is a part of upstream process of fermentation		
a)	Isolation of the product from the fermentation medium		
b)	Separation of the nutrients form the final product		
c)	Sterilization of the fermenter before the start of fermentation		
d)	Packaging of the final product		

28 What is the strength of the bond between antigen and antibody?

- a) Affinity
- b) Avidity
- c) Covalent
- d) Attraction

29. Delayed type of Hypersensitivity is seen in

- a) Penicillin allergy
- b) Contact Dermatitis
- c) Arthus reaction
- d) Anaphylaxis

30. Which of the following statements best describes a clone?

- a) An artificial life form
- b) An offspring where all of the genetic material in every cell is identical to that of both parents
- c) An offspring where all of the genetic material in every cell is identical to that of one of its parents
- d) A type of sheep

31. Which of the following support/carrier is not used in the covalent bonding method?

- a) Phenol rings
- b) Thiol groups
- c) Carbonyl groups
- d) Hydroxyl groups

32. Which of the following are the application of bioinformatics

- a) Drug designing
- b) Precipitation reaction
- c) Agglutination reaction
- d) Serological testing

33. The function of Exonuclease III is

- a) It cleaves from the end of linear DNA and digest dsDNA from 3' end
- b) Addition of terminal phosphates from either the 5' or 3' end (or both)
- c) Cuts both the strands of dsDNA within a symmetrical recognition site resulting in blunt or sticky ends
- d) It joins two DNA molecules of fragments

34. Dextran production is obtained by

- a) *Penicillium chrysogenum*
- b) *Leuconostoc mesenteroides*
- c) *Streptomyces rimosus*

d) *Streptomyces olivaceus*

35. Enzyme immobilization is done

- a) to reduce the activity of the enzyme
- b) to protect the enzyme
- c) to degrade the enzyme at a faster rate
- d) to deactivate the enzyme

36. The most commonly employed crosslinked polymer is

- a) Poly-acrylamide gel
- b) Collagen
- c) Cellulose
- d) Cation Exchange Resin

37. Monoclonal antibodies are produced by

- a) Hybridoma technology
- b) Biotechnology
- c) Fermentation Technology
- d) None of these

38. Cell is an example of prokaryotic cell

- a) Yeast
- b) Molds
- c) Protozoa
- d) Bacteria

39. Northern blotting is used to detect

- a) DNA
- b) RNA
- c) Protein
- d) Both DNA and RNA

40. Transgenic organisms have modified.....

- a) Chemicals
- b) Enzymes
- c) Genetic makeup
- d) Hormones

41. A peptide bond is formed between amino and carboxyl groups of
- Two amino acids
 - Monosaccharides
 - Disaccharides
 - Fatty acids
42. Which of the following belongs to the class of surface fermenter
- Tray Fermenter
 - Pneumatic Fermenter
 - Forced Convection Fermenter
Mechanically Stirred Fermenter
43. Restriction endonuclease enzyme cut DNA fragments of defined length and sequence
- Type I
 - Type II
 - Type III
 - Type IV
44. This r-protein is used in hepatitis, cancer, hairy cell leukemia and genital warts
- Insulin
 - Growth hormone
 - Somatotropin
 - Interferon
45. Transgenic goats produce a variant of human tissue type plasminogen activator protein in
- Blood
 - Urine
 - Milk
 - Muscles
46. Naphthalene acetic acid is commonly used in tissue culture as
- Inorganic nutrient
 - Organic supplement
 - Growth regulator
 - Carbon source
47. In pharmaceutical fermentation process, glucose and fructose are used as
- Nitrogen source
 - Carbon source
 - Minerals
 - Precursors
48. Agglutination reaction is strongest with the immunoglobulin
- IgM
 - IgG
 - IgA
 - IgD
49. Delayed type hypersensitivity reaction is
- Type-I
 - Type-II
 - Type-III
 - Type-IV

50. Which of the following is a method of immobilization?

- a) Covalent Bonding
- b) Blotting
- c) Electrophoresis
- d) PAGE

51. Which of the following is a synthetic polymer used as a support?

- a) Collagen
- b) DEAE cellulose
- c) Zeolites
- d) Starch

52. In the process of fermentation, it is most commonly used as antifoaming agent

- a) Calcium carbonate
- b) Corn oil
- c) Calcium phosphate
- d) Sodium phosphate

53.----- immunity is usually limited to a given area or tissue of the body

- a) Local
- b) Natural
- c) Active
- d) Passive

54. Mountax reaction is used for detection of

- a) Diptheria
- b) Cholera
- c) TB
- d) Typhoid

55. RIA is based on

- a) Antigen-protein interaction
- b) Lectin-antibody interaction
- c) Antibody protein interaction
- d) Antigen-antibody interaction

56. Cell is an example of prokaryotic cell

- a) Yeast
- b) Molds
- c) Protozoa
- d) Bacteria

57. These substances are used to increase the yield or improve the quality of the product

- a) Nitrogen source
- b) Carbon source
- c) Buffers
- d) Precursors

58. Which method is the easiest method of enzyme immobilization

- a) Adsorption
- b) Covalent bonding
- c) Microencapsulation
- d) Entrapment

59. Ligase enzymes are used

- a) to join DNA strands
- b) to cut DNA
- c) for breaking phosphodiester bonds
- d) for DNA sequencing

60. Interferon is

- a) an antiviral protein
- b) an antibacterial protein
- c) a viral protein
- d) a algae protein

61. Which of the following is not the correct statement for MHC Class I molecule.

- a) It has $\alpha 1$, $\alpha 2$, $\alpha 3$ and $\beta 2$ domains
- b) Expressed on almost all nucleated cells
- c) Presenting antigen to CD8+ T cells
- d) Both α and β chains are anchored in the cell membrane

Descriptive Questions

1. Define r-DNA technology and write in detail about the steps of r-DNA technology.
2. Describe in detail about the factors affecting fermentation and production of penicillin by fermentation method.
3. Enlist various serological tests and explain in detail any three tests.
4. Define and classify Enzyme Immobilization and explain method of Adsorption in detail along with its applications.
5. a. Explain reactions involved in microbial biotransformation. (6M)
b. Describe different types of cell lines. (6M)
6. Enlist the different enzymes needed in rDNA Technology. Explain in detail any 5 enzymes used in rDNA technology.
7. Describe in detail the steps involved in constructing a cDNA with the help of a schematic diagram.
8. Define and Explain Biosensors in detail.
9. Explain all blotting techniques in detail.
10. Write a note on fermentation.
11. A) Explain Phagocytosis with the help of a neat labelled diagram.
B) Write a short note on Cell Mediated Immunity
12. A) Elaborate on Production of Dextran by Fermentation technology
B) Differentiate between Salk and Sabin polio vaccine
13. A) Write a note on transgenic animals.

- B) Write a short note on biosensors
- 14 A) Explain Gene Therapy with suitable example.
B) Explain reactions involved in microbial biotransformation with examples.
- 15 A) Write a note on Agarose Gel Electrophoresis.
B) Write a short note on Precipitation reaction of Serology.
16. A) Explain applications on monoclonal antibodies in the pharmaceutical industry.
B) Write a note on Fermentation Media and its components.
17. a. Write a short note on Storage of Whole Blood.
b. Write a short note on microbial biotransformation and enlist its application.
18. Draw a neat labeled diagram of a large scale fermenter and comment on various controls of the fermentation process.
19. a. Write a short note on Plasma Substitutes.
b. Explain the method of production of Monoclonal antibodies and write its applications.
20. Explain Seed lot system of vaccine production. Comment on Storage and stability of vaccines.
21. Enlist the blotting techniques and explain any one in detail.

