**Dayanand Science College, Latur**

**Department of Biotechnology**

**Class: M.Sc. BT S.Y. (sem-IV)**

**Subject:Pharmaceutical Biotechnology (BT-XVII)**

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1. Bacterial cells grown in a medium exposed to high osmotic pressure, changes shape from rod-shaped to \_\_\_\_\_\_\_\_\_\_ shaped.
a) spherical
b) rod shaped
c) irregular
d) elongated

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2. Cell-wall biosynthesis is inhibited by antibiotics by inhibiting the biosynthesis of which of the following?
a) lipopolysaccharide
b) cellulose
c) peptidoglycan
d) proteins

3. Structurally all penicillins have only beta-lactam present in them.
a) True
b) False

4. The crystalline sodium or potassium salts are slightly soluble in \_\_\_\_\_\_\_\_\_\_\_
a) ether
b) dioxane
c) water
d) chloroform

5. Which of the following does not affect the activity of penicillin?
a) bile
b) hydrochloric acid
c) cysteine
d) sodium hydroxide

6. Benzylpenicillin is the chemical name for which of the following penicillin?
a) Penicillin G
b) Penicillin V
c) Penicillin F
d) Phenethicilin

7. Ampicillin is a bactericidal antibiotic.
a) True
b) False

8. Streptomyces orientalis produces which of the following antibiotics?
a) Cephalosporins
b) Cycloserine
c) Bacitracin
d) Vancomycin

9. Which of the following interferes with the regeneration of the monophosphate form of bactoprenol from the pyrophosphate form?
a) Vancomycin
b) Ampicillin
c) Bacitracin
d) Cephalosporins

10. Polymyxins inhibits the growth of the microbes by carrying out which of the following actions?
a) inhibition of cell-wall synthesis
b) damage to cytoplasmic membrane
c) inhibition of nucleic acid and protein synthesis
d) inhibition of specific enzyme systems

11. Streptomycin is produced by which of the following organisms?
a) Stretomyces noursei
b) Streptomyces nodosus
c) Streptomyces fradiae
d) Streptomyces griseus

12. Antibiotic produced by Streptomyces rimosus is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) chlortetracycline
b) oxytetracycline
c) tetracycline
d) doxycycline

13. Which of the following inhibits protein synthesis by combining with the 50S subunit ribosome?
a) Streptomycin
b) Tetracycline
c) Chloramphenicol
d) Penicillin

14. Tyrocidines are more effective against \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Gram-positive organisms
b) Gram-negative organisms
c) Mycoplasmas
d) Spirochetes

**15. The yield of the antibiotic depends upon \_\_\_\_\_\_\_\_\_\_.**

(a) Age of the inoculum

(b) Only the pH of the medium

(c) Composition of the medium

(d) All of the above

**16. In**Penicillium chrysogenum**, the maximum antibiotic production occurs during the \_\_\_\_\_\_\_\_\_\_.**

(a) The second phase

(b) The third phase

(c) First phase

(d) In all three phases

**17. Antibiotics are used to treat infections by**

(a) Virus

(b) Bacteria

(c) All the microorganisms

(d) None of the above

**18. Which of the following fermentation processes is used in the production of penicillin?**

(a) Aerobic fermentation followed by anaerobic fermentation

(b) Anaerobic fermentation

(c) Aerobic fermentation

(d) Anaerobic fermentation followed by aerobic fermentation

**19. After the fermentation process, penicillin is recovered as**

(a) Penicillin

(b) Sodium penicillin

(c) Calcium penicillin

(d) Potassium penicillin

**20. Which of the following species is used for producing streptomycin?**

(a) S. ramosus

(b) S. griseus

(c) S. aureofaciens

(d) S. griseoflavus

**21. The high yield of chlortetracycline requires \_\_\_\_\_\_\_\_\_\_\_\_.**

(a) No aeration

(b) Controlled aeration

(c) Continuous aeration

(d) Aeration which does not affect the yield

**22. What is meant by antibiotic resistance?**

(a) It means our body has become resistant to the antibiotic

(b) It means the bacteria have developed antibiotic resistance

(c) Both (a) and (b)

(d) None of the above

**23. Which of the following seeds are used for the inoculum preparation for the fermentation medium for penicillin?**

(a) Rice seeds

(b) Corn seeds

(c) Wheat seeds

(d) Barley seeds

**24. Which of the following species is used for producing tetracycline?**

(a) S. venezuelae

(b) S. griseus

(c) S. aureofaciens

(d) S. griseoflavus

**25. Which of the following antibiotics are most likely responsible for hypotension, itching and other side effects?**

(a) Aztreonam

(b) Vancomycin

(c) Daptomycin

(d) Linezolid

**26. What type of side effect is most commonly observed in beta-lactam antibiotics?**

(a) Hearing loss

(b) Aplastic anaemia

(c) Allergic reaction

(d) Yellowing of teeth

**27. Which of the following species is used for producing chloromycetin?**

(a) S. ramosus

(b) S. venezuelae

(c) S. aureofaciens

(d) S. griseoflavus

**28. Which of the following events occurs during the third phase of growth of**Penicillium chrysogenum**?**

(a) Autolysis of the medium starts

(b) Slight rise in pH due to liberation of ammonia

(c) The concentration of antibiotic increases in the medium

**(d) All of the above.**

**29.** **Which of the following species is used for producing erythromycin?**

(a) S. erythreus

(b) S. griseus

(c) S. aureofaciens

(d) S. griseoflavus

30. Metabolic intermediates found in living system which are essential for growth and life is called\_\_\_\_\_\_\_\_\_\_\_
a) Saponins
b) Tannins
c) Secondary metabolite
d) Primary metabolites

31. Secondary metabolites are the essential component of the plant growth.
a) True
b) False

32. Which of the following is NOT the class of secondary metabolite.
a) Amino acids
b) Terpenes
c) Phenolics
d) Alkaloids

33. How many isoprene units, are there in sesquiterpenes?
a) 1
b) 2
c) 3
d) 8

34. Which of the following does NOT take part in the biosynthesis of terpenes?
a) Mevalonic acid
b) Methylerythritol phosphate
c) Acetyl-COA
d) Phenol

35. Beta-carotene, a plant pigment falls under which of the following classes of terpenes?
a) Triterpenes
b) Teteraterpenes
c) Diterpenes
d) Polyterpenes

36. Name the class of secondary metabolites which is characterized by the presence of the hydroxyl group with an aromatic ring?
a) Glycosides
b) Phenolics
c) Alkaloids
d) Terpenes

37. Which of the following class does NOT belong to phenolic compounds?
a) Xanthone
b) Lignans
c) Gossypol
d) Flavonoids

38. Name the phenolic compound present in tea?
a) Flavonoids
b) Lignans
c) Stilbene
d) Neolignans

39. Epicatechin gallate (ECG) is a type of flavonoid, found in which of the following?
a) Orange
b) Green tea
c) Berries
d) Carrot

40. Amino acids sequence in DNA can be determined by the order of their \_\_\_\_\_\_\_\_\_
a) rRNA
b) tRNA
c) Nucleotides
d) mRNA

41. Which of the following is a Sanger’s reagent?
a) 1-fluoro-2, 4-dinitrobenzene
b) 1-fluoro-2, 3-dinitrobenzene
c) 1-fluoro-2, 4-trinitrobenzene
d) 1-fluoro-2, 3-trinitrobenzene

42. The amino acid sequences of thousands of different proteins from many species have been determined using principles first developed by?
a) Edman
b) Sanger
c) Mendel
d) Watson and Crick

43. Which of the following compound is not involved in Edman degradation?
a) Phenylisothiocyanate
b) CF3 COOH
c) FDNB
d) Phenylthiocarbonyl

44. Which of the following statements is false?
a) Oxidation of cysteine residue with performic acid is done to break disulfide bond in proteins
b) Reduction of cysteine residue with dithiothreitol is done to break disulfide bond in proteins
c) Reduction of cysteine residue with performic acid is done to break disulfide bond in proteins
d) Reduced cysteine is further acetylated by iodoacetate

45. Cleaving of peptide chain is done by \_\_\_\_\_\_\_\_\_
a) Trypsin
b) Tyrosine
c) Tryptophan
d) Arginine

46. Which of the following is the correct order of sequencing?
a) Cleaving, sequencing and ordering
b) Sequencing, ordering and cleaving
c) Ordering, cleaving and sequencing
d) Ordering, sequencing and cleaving

47. Edman degradation is used for \_\_\_\_\_\_\_\_\_
a) Identifying N-terminal amino acids
b) Identifying C-terminal amino acids
c) Identifying amino acid
d) Identifying carbohydrates

48. What best summarizes the MALDI method by which gas phase ions are produced for mass spectrometry?
a) Sample is hit by a low energy xenon beam
b) Sample is forced through a narrow capillary tube and the solvent rapidly evaporates
c) Sample is embedded in a crystalline matrix and bombarded by laser beams
d) Sample is heated and then bombarded by electrons

49. Which of the following is Edman reagent?
a) Phenylisothiocyanate
b) CF3 COOH
c) FDNB
d) Phenylthiocarbonyl

50. Purification of a protein can be measured as an increase in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) temperature
b) pH value
c) specific activity
d) polarity

51. Total nitrogen measurement can be used to measure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) pH drift
b) total protein
c) specific enzyme
d) viscosity

52. Protein’s solubility depends on the relative balance between protein-solvent and protein-protein interactions.
a) True
b) False

53. Which of the following can be used for selective precipitation of proteins?
a) alcohol
b) phenol
c) ammonium sulfate
d) sodium acetate

54. In the liquid column chromatography, there are two phases namely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) mobile, immobile
b) liquid, gel
c) viscous, non-viscous
d) flammable, inflammable

55. Which of the following uses non-compressible matrix and high pressure?
a) HPLC
b) GC-MS
c) LC-MS
d) MS-MS

56. When the pH of a protein is lowered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) temperature decreases
b) negatively-charged groups neutralize
c) positively-charged groups neutralize
d) positively-charged groups decrease

57. A protein is neutral at the isoelectric point.
a) True
b) False

58. Which of the following is used as an ion-exchanger resin?
a) ethanol
b) cellulose
c) starch
d) collagen

59. In ion-exchange chromatography, proteins bound to the resin can be displaced by increasing the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) strength of ionic buffer
b) size of sample
c) column volume
d) column width

60. Gel-filtration chromatography separates proteins based on their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) pH
b) temperature
c) morphology
d) effective size

61. In gel-filtration chromatography, the proteins \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) bind to the column
b) diffuse through the column
c) denature
d) vaporize

62. Proteins interacting with specific substances can be separated using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) ion-exchange chromatography
b) paper chromatography
c) affinity chromatography
d) gel-filtration chromatography

63. The yeast two-hybrid system is used for studying \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) protein-protein interactions
b) pressure changes
c) molecular size
d) differentiation pattern

64. Polyacrylamide gel electrophoresis uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to separate proteins.
a) pressure difference
b) temperature difference
c) electric field
d) magnetic field

65. Mutagens are physical or \_\_\_\_\_\_\_\_\_ agents.
a) Chemical
b) Mechanical
c) Hybrid
d) Exogenous

66. Site-directed mutagenesis is changing a given base in the cloned DNA.
a) True
b) False

67. Creation of mutant proteins with novel properties is called \_\_\_\_\_\_\_\_\_\_\_\_
a) Cloning
b) Protein engineering
c) Mutagenesis
d) Sequencing

68. When was the first method of site-directed mutagenesis developed?
a) 1940
b) 1970
c) 1980
d) 1950

69. For single-primer method the DNA must be \_\_\_\_\_\_\_\_\_\_
a) Long
b) Short
c) Double-stranded
d) Single-stranded

70. The synthetic oligonucleotide \_\_\_\_\_\_\_\_\_\_ the DNA synthesis.
a) Primes
b) Shortens
c) Lengthens
d) Degrades

71. Clones can be screened using a \_\_\_\_\_\_\_\_\_\_\_\_\_
a) PCR
b) Suppressor
c) Probe
d) Promoter

72. The use of high-fidelity DNA polymerases has minimized the problem of \_\_\_\_\_\_\_\_\_\_\_\_ mutations.
a) Internal
b) Site-directed
c) Extraneous
d) Point

73. Contamination in heteroduplex molecules can be removed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Gel electrophoresis
b) PCR
c) Chromatography
d) Distillation

74. The repair system of E.coli is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Lacking
b) Cysteine-directed
c) Methyl-directed
d) Mutated

75. Which DNA are repaired at the site of mismatch?
a) Long
b) Short
c) Degraded
d) Unmethylated

76. Which of the following mutations are not used to overcome problems associated with the mismatch repair system?
a) MutL
b) MutS
c) MutH
d) MutE

77. The mutated strains mutL, mutS, and mutH prevent the methyl-directed repair of mismatches.
a) True
b) False

78. All the primer extension methods of mutagenesis require \_\_\_\_\_\_\_\_\_\_\_\_\_ template.
a) Double-stranded
b) Degraded
c) Single-stranded
d) RNA

79. Which kind of DNA are easier to prepare for PCR mutagenesis?
a) Linear
b) Circular
c) Single-stranded
d) Double-stranded

80. Which of the following is not a mechanism for pharmacokinetic analysis?
a) Compartment analysis
b) Non compartment analysis
c) Physiologic modeling
d) Human model

81. In which of the following models the body is considered to be composed of several compartments?
a) Compartment model
b) Noncompartment model
c) Physiologic model
d) Human model

82. In which of the model peripheral compartments are connected to a central compartment?
a) Compartment model
b) Caternary model
c) Physiologic model
d) Mammillary model

83. Which organs will make up the peripheral compartment?
a) Lungs
b) Liver
c) Kidneys
d) Pancreas

84. Which of the following drugs cannot be given as transdermal administration?
a) Drugs with very short half-lives
b) Drugs with narrow therapeutic indices
c) Easy removal and termination
d) Drugs against peptic ulcer

85. Which of the following characteristics is suitable for transdermal drug?
a) Large drug dose
b) Large molecular size
c) Drugs with narrow therapeutic indices
d) Drugs which are metabolized in the skin

86. Sulfonamides are chemical analogues of a)Carboxylic Acid b)Hydrochloric Acid c)Paraaminobenzoic Acid d)Folic Acid

87.The branch of pharmacology concerned with the effects of drug and the mechanism of their action is known as a)Pharmaceuticals b)Pharmacokinetics c)Pharmacodynamics d)Pharmaceutical Biotechnology

88.Experimental process which is performed outside the living body in an 'Artificial Invivo Environment' is known as a)Invitro Screening b)Insilico Screening c)Exvivo Screening d)Invivo Screening

89.The class of medications used specifically for treating viral infections are a)Antifungal Drugs b)Antibacterial Drugs c)Antiparasitics d)Antiviral Drugs

90.In which Phase trials test,new drugs are approved by FDA. a)Phase I b)Phase II c)Phase III d)Phase IV

91.Which of the following is the correct order of the three major components of a Mass Spectrometer. a)Ion Source,Analyzer,Detector System b)Analyzer,Ion Source,Detector System c)Analyzer,Detector System,Ion Source d)Detector System,Ion Source,Analyzer

92.The structural main components of Liposomes are a)Phospholipids and Ergosterol b)Ketones and Phospholipids c)Phospholipids and Cholesterol d)Glycolipids and Ketones

93.In humans,inside liver,in which cells is Blood Factor VIII produced a)Endothelial cells b)Sinusoidal cells c)Epithelial cells d)Hepatic cells

94.Phage Display is the technique for the study of a)Protein-Protein Intercations b)Protein-DNA Interactions c)Protein-Peptide Interactions d)All of the above

95.Effective doses are used to indicate a)Effectiveness of a substance b)Work of the substance c)Response of the human body d)Both (b) & (c)

96.The types of Secondary plant metabolites include a)Phenolics b)Alkaloids c)Terpenes d)All of the above

97.The neurotransmitter-receptor complex,by opening or closing specific ion channels may directly alter the permeability of the a)Neuron b)Cell Membrane c)Nucleus d)Ligands

98.The site-directed mutagenesis is an artificial (in vitro) technique for introducing mutation into the target a)RNA sequence b)DNA sequence c)Protein sequence d)Ribosomes

99. The branch of pharmacology concerned on how body acts on drug is known as a)Pharmaceuticals b)Pharmacokinetics c)Pharmacodynamics d)Pharmaceutical Biotechnology

100.The computational methods and resources that are used to facilitate the design and discovery of new drugs is known as a)Computer Aided Drug Design b)Rational Drug Design c)Drug Design d)Combinatorial Drug Discovery

Answer Key

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.A | 2.C | 3.B | 4.D | 5.A | 6.A | 7.A | 8.D | 9.C | 10.B |
| 11.D | 12.B | 13.C | 14.A | 15.D | 16.A | 17.B | 18.C | 19.D | 20.B |
| 21.C | 22.B | 23.D | 24.C | 25.B | 26.C | 27.B | 28.D | 29.A | 30.D |
| 31.B | 32.A | 33.C | 34.D | 35.B | 36.B | 37.C | 38.A | 39.B | 40.C |
| 41.A | 42.B | 43.C | 44.C | 45.A | 46.A | 47.A | 48.C | 49.A | 50.C |
| 51.A | 52.A | 53.C | 54.A | 55.A | 56.B | 57.A | 58.B | 59.A | 60.D |
| 61.D | 62.C | 63.A | 64.C | 65.A | 66.A | 67.B | 68.C | 69.D | 70.A |
| 71.C | 72.C | 73.C | 74.C | 75.D | 76.D | 77.A | 78.C | 79.D | 80.D |
| 81.A | 82.D | 83.D | 84.D | 85.C | 86.C | 87.C | 88.C | 89.D | 90.D |
| 91.A | 92.C | 93.B | 94.D | 95.A | 96.D | 97.B | 98.B | 99.B | 100.A |