

SCIENTIFIC ASSISTANT - BIOCHEMISTRY

1. **What is a red shift?** I. The shifting of an absorption to higher energy II. The shifting of an absorption towards the blue end of the spectrum. III. The shifting of an absorption to lower energy IV. The shifting of an absorption to shorter wavelength
 - 1) All are correct
 - ~~2) III alone is correct~~
 - 3) I, II and III are correct
 - 4) III and IV are correct
2. **The sugar, fructose can be separated by :**
 - 1) Polyacrylamide gel electrophoresis
 - ~~2) Thin layer chromatography~~
 - 3) Salting out
 - 4) All the above
3. **Cellulose is a _____ made of many _____.**
 - ~~1) Polymer and $\beta(1 \rightarrow 4)$ glucose~~
 - 2) Polymer and $\alpha(1 \rightarrow 4)$ glucose
 - 3) Polymer and $\beta(1 \rightarrow 6)$ glucose
 - 4) Polymer and $\alpha(1 \rightarrow 6)$ glucose
4. **The inactive zymogen of chymotrypsin is :**
 - ~~1) Chymotrypsinogen~~
 - 2) Irreversibly denatured
 - 3) Cleaved by trypsin
 - 4) All the above
5. **The more specific indicator of cardiac muscle damage is :**
 - ~~1) CK - MB~~
 - 2) CK - MM
 - 3) CK - BB
 - 4) None of these
6. **In which phase of growth, rapid cell division occurs?**
 - 1) Lag phase
 - 2) Linear phase
 - 3) Stationary phase
 - ~~4) Logarithmic phase~~
7. **This immunoglobulin has a pentameric structure :**
 - ~~1) IgM~~
 - 2) IgE
 - 3) IgA
 - 4) IgD
8. **What is added to the 3'end of many eukaryotic mRNA after transcription?**
 - 1) Introns
 - 2) the trinucleotide 3' -CCA
 - 3) Inteins
 - ~~4) Poly A tail~~
9. **Which of the following does NOT include soil borne bacteria?**
 - 1) B. Subtills
 - 2) Achromobacter
 - 3) P.Fluorescence
 - ~~4) C.Perfrigens~~
10. **Bacterial protoplast is mainly composed of :**
 - ~~1) Phospholipids~~
 - 2) Glycolipids and phospholipids
 - 3) Phospholipids and cholesterol
 - 4) Glycolipids
11. **Ether lipids are otherwise known as :**
 - 1) Lecithins
 - 2) Cephalins
 - ~~3) Plasmalogens~~
 - 4) Cardioliipin
12. **If you start out with a population density of 200 CFU/ml, of a bacterium that divides every 20 minutes, what will the population density be at the end of two hours, assuming the cells are in the log phase of growth?**
 - ~~1) 26 CFU/ml~~
 - 2) 3200 CFU/ml
 - ~~3) 12800 CFU/ml~~
 - 4) 2006 CFU/ml

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13. **Prokaryotic DNA replication does not involve :**

- 1) DNA Polymerase I
- 2) DNA Polymerase II
- 3) DNA Polymerase III
- 4) DNA gyrase

14. **Binding between antigen and antibody is called :**

- 1) Hydrophilicity
- 2) Hydrophobicity
- 3) Antigenicity
- 4) Affinity

15. **Fluorescein diacetate is used to assess the :**

- 1) Shape of the cell
- 2) Size of the cell
- 3) Viability of cell
- 4) Growth rate of cell

16. **In presence of insulin, which of the following processes are stopped?**

- 1) Glucogenesis
- 2) Glycogenolysis
- 3) Ketogenesis
- 4) All of these

17. **Which statement about enzyme catalyzed reactions is NOT true?**

- 1) Enzymes form complexes with their substrates
- 2) Enzymes lower the activation energy for chemical reactions
- 3) Enzymes change the K_{eq} for chemical reactions.
- 4) Reactions occur at the "active site" of enzymes, where a precise 3D orientation of amino acids is an important feature

18. **The overall three dimensional shape of a polypeptide is called the:**

- 1) Primary structure
- 2) Secondary structure
- 3) Tertiary structure
- 4) Quaternary structure

19. **The major disaccharide of insect hemolymph is :**

- 1) Chitin
- 2) Glucan
- 3) Glucosamine
- 4) Trehalose

20. **Lycopene ($\lambda_{max} = 469$ nm) is present in tomatoes. What colour of light does lycopene absorb?**

- 1) Blue
- 2) Red
- 3) Green
- 4) Orange

21. **Totipotency is the genetic potential of a plant cell to produce :**

- 1) Flower
- 2) Leaf
- 3) Stem
- 4) Entire plant

22. **Morphologically T and B cells can be distinguished by :**

- 1) Size differences
- 2) Secretory granules
- 3) Cytoplasm
- 4) None of these

23. **Taq DNA polymerase lacks :**

- 1) 3'-5' proof reading activity
- 2) 5'-3' proof reading activity
- 3) 3'-5' polymerase activity
- 4) 5'-3' polymerase activity

24. **The blooms of these protists gives water a watermelon-like taste. What is this microlife called?**

- 1) Gonium
- 2) Pandorina
- 3) Netrium
- 4) Hydrodictyon

25. In animal plasma membranes,

- ~~1) sphingomyelin and phosphatidylcholine are predominantly present in the outer half~~ 2) sphingomyelin and phosphatidylcholine are predominantly present in the inner half
 3) sphingomyelin and phosphatidylcholine are predominantly present both in the inner and outer half 4) None of these

26. Apolipoprotein B100 is not associated with :

- 1) Chylomicrons ~~2) HDL~~
 3) LDL 4) VLDL

27. What refers to the situation in which the binding substrate to the enzyme causes a change in the enzyme's shape facilitating the enzyme's function?

- 1) Active site 2) Allosteric inhibition
~~3) Induced fit~~ 4) Cofactor

28. λ Max of rhodopsin is :

- 1) 455 nm 2) 700 nm
~~3) 500 nm~~ 4) 625 nm

29. Name the isomer differing as a result of variation in configuration of the -OH and -H on Carbon atom-2 of glucose is known as :

- 1) Fructose 2) Galactose
~~3) Mannose~~ 4) All of these

30. An aqueous solution of a dye has a strong absorption with $\lambda_{\max} = 464 \text{ nm}$. The colour of the solution is :

- 1) Colourless 2) Green
~~3) Orange~~ 4) Purple

31. Which sugar is essential for cyto differentiation?

- 1) Glucose 2) Maltose
~~3) Sucrose~~ 4) Fructose

32. Blood lymphocytes that are neither T nor B cells are :

- 1) Plasma cells ~~2) NK cells~~
 3) Epithelial cells 4) Haplenes

33. The relative migration of protein in SDS-PAGE depends on :

- 1) pH used in separation 2) Presence of tracking dye
 3) Native quaternary structure ~~4) Monomer molecular mass~~

34. What is the role of nitrosomonas in nitrogen fixation?

- ~~1) Oxidises ammonia into nitrite~~ 2) Oxidises nitrite into nitrite
 3) Converts nitrogen to nitrite 4) None of these

35. The following is true for membrane fluidity except :

- 1) Membrane biogenesis 2) Trafficking
 3) Exocytosis and endocytosis ~~4) Non viscous in nature~~

36. Which of the following absorption maxima is NOT in the visible range of the electronic spectrum?

- 1) $\lambda_{\max} = 480 \text{ nm}$ ~~2) $\lambda_{\max} = 250 \text{ nm}$~~
 3) $\lambda_{\max} = 550 \text{ nm}$ 4) $\lambda_{\max} = 750 \text{ nm}$

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37. **Edman's reaction is used to :**

- 1) Determine the amino acid sequence of a protein
- 2) Determine the number of aromatic amino acid residues in a protein
- 3) Determine the number of tyrosine residues in a protein
- 4) Hydrolyze the peptide bonds in a protein

38. **Match List-I with List-II and select your answer using the codes given below.**

List - I	List - II
a. D - Ribose	1. Monophosphate shunt
b. D - Ribulose	2. Gum arabic
c. D - Arabinose	3. Wood gums
d. D - Xylose	4. Nucleic acid

	a	b	c	d
A.	3	2	1	4
B.	2	1	3	4
C.	1	2	3	4
D.	4	1	2	3

39. **In describing enzyme feature, the enzymes :**

- 1) are composed primarily of polypeptides, which are polymers of amino acids
- 2) can bind prosthetic groups such as metal ions that participate in enzyme reactions
- 3) bind their substrates at active sites
- 4) All the statements are true

40. **Which of the following are ketone bodies?**

- 1) Acetone
- 2) Acetoacetic acid
- 3) Beta-hydroxybutyric acid
- 4) All the above

41. **Blue light promotes:**

- 1) Shoot formation
- 2) Rooting
- 3) Flowering
- 4) Pigmentation

42. **IgD is a :**

- 1) Pentamer
- 2) Octamer
- 3) Antigen receptor on B cells
- 4) First antibody to appear during an immune response

43. **The standard PCR does not efficiently amplify sequences longer than about -**

- 1) 1 KB
- 2) 0.5 KB
- 3) 3 KB
- 4) 1.5 KB

44. **Which one of the following is an aerobic non-symbiotic nitrogen fixing bacteria?**

- 1) *Azetobacter*
- 2) *Clostridium pasteurianum*
- 3) *Agarobacterium*
- 4) *Nitrosomonas nitrosus*

45. **The ratio by weight of protein to lipid :**

- 1) is high in outer mitochondrial membrane
- 2) is high in inner mitochondrial membrane
- 3) is high in myelin membrane
- 4) is equal in all directions

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46. Kwashiorkor results due to deficiency of :

- 1) Dietary protein
- 2) Dietary carbohydrates
- 3) Dietary lipids
- 4) Dietary vitamins

47. In understanding activation energy, activation energy is :

- 1) energy that must be added to get a reaction started, which is recovered as the reaction proceeds
- 2) difference in energy between reactants and products
- 3) energy that is lost as heat
- 4) free energy

48. Dihydroxyacetone phosphate is a substrate for - 1. α - glycerophosphate dehydrogenase 2. Aldolase 3. Triose phosphate isomerase 4. Transketolase

- 1) 1, 2 and 3 are correct
- 2) 1 and 3 are correct
- 3) 2 and 3 are correct
- 4) Only 4 is correct

49. Find the sugar which is used experimentally as an inhibitor of dextrose metabolism.

- 1) 2-Deoxyglucose
- 2) 2-Deoxyribose
- 3) 6-Deoxygalactose
- 4) All of these

50. Which of the following statement is consistent with an electronic absorption being broad?

- 1) Electronic transitions are always localized on a single atomic centre
- 2) An electronic absorption includes vibrational and rotational structure
- 3) Hydrogen bonding causes an electronic absorption to be broad
- 4) The absorption of a photon is slower than the timescale of molecular vibrations

51. The transmembrane sialo glyco protein of human erythrocyte membrane is :

- 1) Actin
- 2) Glycophorin
- 3) Spectrin
- 4) Ankyrin

52. Which is least likely to kill bacteria?

- 1) Extreme alkalinity
- 2) Extreme heat
- 3) Extreme cold
- 4) Extreme acidity

53. Specificity of target sequence and probe can be increased by :

- 1) High salt concentration
- 2) Low salt concentration and high temperature
- 3) Low temperature
- 4) High salt and low temperature

54. Phagocytosis must be preceded by :

- 1) Antigen binding
- 2) Chemotaxis
- 3) Oxidative burst
- 4) All of these

55. Cell aggregation is regulated by :

- 1) Vitamin E
- 2) Vitamin D
- 3) Inositol
- 4) Biotin

56. A compound X is characterised in its electronic spectrum by an absorption with $\lambda_{\max} = 217 \text{ nm}$ ($\epsilon_{\max} = 21000 \text{ dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$). Of the compounds given below, X is most likely to be :

- 1) buta-1,3-diene
- 2) Ethanol
- 3) Water
- 4) β -carotene

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57. Which of the following amino acids are having acidic groups as side chains?

- 1) Ser, Phe
2) Phe, Met
3) Phe, Tyr
4) Glu, Asp

58. Which of the following is/are pair(s) of epimers? 1. Glucose : Mannose 2. Glucuronic Acid : Galaturonic acid 3. N-acetyl glucosamine : N-acetyl galatosamine 4. Mannose : fucose

- 1) 1, 2 and 3 are correct
2) 1 and 3 are correct
3) 2 and 4 are correct
4) Only 4 is correct

59. The energy-requiring reactions can occur in biological systems because enzymes allow their coupling to other reactions with :

- 1) an increase in entropy
2) a low activation energy
3) no inhibitors
4) products of lower free energy than the reactants

60. Methotrexate is an inhibitor of :

- 1) Pyruvate kinase
2) Dihydrofolate reductase
3) Glucokinase
4) Phospho fructo kinase

61. The phenotypic variation which has a non-genetic basis is called :

- 1) Epigenetic change
2) Genetic change
3) Cytogenetic change
4) Maternally inherited change

62. All of the following are true with respect to IgM antibody except :

- 1) Fix complement
2) Occur on the surface of lymphocytes
3) Glycoproteins
4) Mediate allergic reaction

63. Non-specific binding of probes to non-homologous DNA on the blot can be reduced by :

- 1) mRNA
2) Rate enhancers
3) Heterologous DNA
4) tRNA

64. Which of the following starter organisms are used in lactic acid and production?

- 1) *Streptococcus* and *Lactobacillus*
2) *Lactobacillus* and *Bacillus cereus*
3) *Lactobacillus* and *E. Coli*
4) *Bacillus cereus* and *Campylobacter laridies*

65. Connexons are the component proteins of :

- 1) Desmosomes
2) Tight junction
3) Gap junction
4) Basal lamina

66. Fluorine is monotopic (^{19}F). What would you expect to see in the mass spectrum of F_2 ?

- 1) The spectrum contains peaks at $m/z = 38$ and 19 of equal intensities.
2) The spectrum contains one peak at $m/z = 38$
3) The spectrum contains one peak at $m/z = 19$
4) The spectrum contains peaks at $m/z = 38$ and 19, and these are probably of different intensities.

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67. The water soluble polysaccharide used to determine the glomerular filtration rate is :
- 1) Creatinine
 - 2) Dextrin
 - 3) Inulin
 - 4) Insulin
68. Glycogen phosphorylase is : 1.Activated by phosphates 2.More active when CAMP is high 3.Less active when CAMP is high 4.Activated by kinase
- 1) 1, 2 and 3 are correct
 - 2) 1 and 3 are correct
 - 3) 2 and 4 are correct
 - 4) Only 4 is correct
69. In reference to the equilibrium constant for hydrolysis of glucose-6-phosphate, the equilibrium constant for the reaction, glucose 6-phosphate + water \rightarrow glucose + phosphate is 260. What can you conclude about this reaction?
- 1) It is a closed system
 - 2) It never reached equilibrium
 - 3) Starting with glucose 6-phosphate, it is not spontaneous
 - 4) At equilibrium, the concentration of glucose is much higher than the concentrations of glucose 6-phosphate.
70. CRBP is found bound to :
- 1) Vitamin C
 - 2) Vitamin K
 - 3) Vitamin A
 - 4) Vitamin D
71. The piece of tissue that is used to initiate the culture :
- 1) Callus
 - 2) Cell culture
 - 3) Explant
 - 4) Inoculum
72. All of the following are true of antigen EXCEPT :
- 1) They contain epitopes
 - 2) They contain antigenic determinants
 - 3) They will react with antibodies
 - 4) They contain paratopes
73. Phasmid possess the features of both
- 1) Plasmid and cosmid
 - 2) Bacteriophage λ and Plasmid
 - 3) Plasmid and F₁ phage
 - 4) Plasmid and M13 phage
74. Excessive algal growth in ponds can be prevented by applying :
- 1) Copper Sulphite
 - 2) Copper chloride
 - 3) Copper Sulphate
 - 4) Copper Nitrite
75. The following are true with regard to gap junction EXCEPT :
- 1) Gap junctions are widely distributed in neurons
 - 2) Gap junctions ensure directional communication in neuronal cells
 - 3) Gap junctions ensure direct electrical communication
 - 4) Gap junctions allow molecules smaller than 1000 Daltons to pass through
76. Antioxidant for singlet oxygen is :
- 1) Vitamin A
 - 2) β -Carotene
 - 3) Vitamin E
 - 4) All of these
77. When speaking about energy requiring and energy yielding reactions which answer makes the following statement correct: The result of a(n) _____ reaction is that energy is released. Energy must be added for a(n) _____ reaction to proceed.
- 1) Enzyme catalyzed, non-spontaneous
 - 2) Exergonic, endergonic
 - 3) Endergonic, spontaneous
 - 4) Catalytic, non-catalytic

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78. Activation of inactive glycogen synthase requires : 1. Glucose - 1 - phosphate 2. Epinephrine 3. CAMP 4. Glucose - 6 - phosphate
- 1) 1, 2 and 3 are correct
2) 1 and 3 are correct
3) 2 and 4 are correct
4) Only 4 is correct
79. List out the 9-carbon sugar derived from mannosamine and pyruvate from the following :
- 1) Concanavalin A
2) Glycocalyx
3) Neuraminic acid
4) Iduronic acid
80. Bromine possesses two isotopes (^{79}Br and ^{81}Br) in an approximate 1 : 1 ratio. In the mass spectrum of Br_2 , how many peaks will the parent ion contain?
- 1) 4
2) 1
3) 3
4) 2
81. The major ion present in mammalian cytosol is :
- 1) K^+
2) Mg^{++}
3) Ca^{++}
4) Cl
82. Which strain of yeast is commonly employed in the commercial production of Ethanol?
- 1) *S. Boulardii*
2) *S. Cerevisiae*
3) *S. Probiotic*
4) *S. Carlsbergensis*
83. cDNA library is prepared by :
- 1) Reverse transcribing mRNA
2) Reverse transcribing rRNA
3) Transcribing mRNA
4) None of these
84. All of the following are true with respect to IgE EXCEPT :
- 1) Allergic reaction
2) Antiparasitic immune reactions
3) Cross the placenta and fix complement
4) Least abundant immunoglobulin in serum
85. The nutrient medium is solidified by adding definite amount of :
- 1) Carbohydrate
2) Vitamin
3) Aminoacid
4) Agar-agar
86. Which of the following is correct?
- 1) Phylloquinone is Vitamin K_1
2) Menaquinone is Vitamin K_3
3) Menadione is Vitamin K_2
4) None of these
87. How would the pK_a value of glutamic acid residue be affected if it were in a very hydrophilic environment?
- 1) pK_a would be increased
2) pK_a would be decreased
3) pK_a would not be changed
4) Cannot predict the behaviour
88. The side chain of serine can be involved in which of the following?
1. Phosphorylation 2. Hydrogen bonding 3. Covalent carbohydrate attachment 4. Salt bridges
- 1) 1, 2 and 3 are correct
2) 1 and 3 are correct
3) 2 and 4 are correct
4) Only 4 is correct

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101. The main technique used to analyse samples suspected of containing liquid fire accelerants is :

- 1) X-ray diffraction
2) Ultraviolet visible spectroscopy
3) Atomic absorption spectroscopy
4) Gas chromatography

102. Aglycone portion in saponin is :

- 1) Glucose
2) Sapogenin
3) Spiroketal
4) Squalene

103. The synthesis of glucose from lactate, glycerol or amino acids is called :

- 1) Glycogenesis, Glycolysis, Lipolysis
2) Glycolysis, Glycogenolysis, Lipolysis
3) Lipolysis, Glycolysis, Glycogenolysis
4) Gluconeogenesis

104. Which of the statements regarding enzymes is false?

- 1) Enzymes are proteins that function as catalysts
2) Enzymes are specific
3) Enzymes provide activation energy for reactions
4) Enzyme activity can be regulated

105. Deficiency of the following vitamin leads to beri-beri

- 1) Thiamin
2) Niacin
3) Pyridoxine
4) None of these

106. Insulin receptor is :

- 1) Monomer
2) Dimer
3) Trimer
4) Tetramer

107. Among the following which has a single stranded DNA molecule?

- 1) Adenovirus
2) Papillomavirus
3) Parvovirus
4) Hepatitis B Virus

108. Vitamin B1 is also known as :

- 1) Thiamine
2) Thymine
3) Niacine
4) Folic acid

109. For specific antigen recognition by T cells -

- 1) Antigen is bound by a T cell membrane antibody
2) Denaturation of antigen does not reduce epitope recognition
3) MHC molecules are not required
4) Soluble antigen is bound directly without processing

110. The cholesterol molecule is a -

- 1) Benzene derivative
2) Quinoline derivative
3) Steroid
4) Tocopherol

111. Gastric ulcers are caused by :

- 1) Helicobacter pylori
2) Vibrio cholerae
3) Lactic acid bacteria
4) Streptococcus

112. Passive immunization relies upon the use of :

- 1) Polysaccharides
2) Toxoids
3) Vaccines
4) Anti toxins

113. In early contour clamped homogenous electric field, electrophoresis (CHEF) the re-orientation angle is fixed at :

- 1) 110°
- 2) 115°
- 3) 100°
- 4) 120°

114. Name the two volatile substances produced by streptomyces :

- 1) Geosmin and 2-Methyl-Isoborneol
- 2) Propanol and methyl-isoborneol
- 3) Isopropanal
- 4) Gasoline and methyl alcohol

115. This is true of active transport :

- 1) Transportation of lower to higher concentration
- 2) Does not require energy
- 3) Does not use electrochemical gradient
- 4) All of the above

116. Which of the following analytical techniques, based on the Bragg equation, may be used to reveal the crystalline components of paints on the basis of their crystal structures?

- 1) Micro-spectrophotometer
- 2) X-ray powder diffraction
- 3) Raman spectroscopy
- 4) Infrared spectroscopy

117. Example for Aldotriose is :

- 1) Erythrose
- 2) Erythrulose
- 3) Glyceraldehyde
- 4) Threose

118. The major source of carbohydrate in a typical Western diet is :

- 1) Amylose, cellulose glycogen
- 2) Cellulose, Glycogen, Saccharin
- 3) Starch
- 4) Sucrose, Glycogen, Glucose

119. The relationship between an enzyme and a reactant molecule can be best described as :

- 1) A temporary association
- 2) An association stabilized by a covalent bond
- 3) One in which the enzyme is changed permanently
- 4) A permanent mutual alteration of structure

120. Of the following trace elements, which is abundantly needed by the human body?

- 1) Zinc
- 2) Sodium
- 3) Potassium
- 4) Manganese

121. Which of the following is a type of vibrational spectroscopy?

- 1) Atomic absorption spectroscopy
- 2) Raman spectroscopy
- 3) Infrared spectroscopy
- 4) X-ray powder diffraction

122. A messenger ribonucleic acid is 336 nucleotides long including the initiator and termination codons. The number of amino acids in the protein translated from this mRNA is :

- 1) 112
- 2) 111
- 3) 330
- 4) 110

123. Liver glycogen breakdown is stimulated by : 1. Insulin 2. Glucagen 3. Adrenaline 4. Starch

- 1) 1 and 2 are correct
- 2) 1 and 3 are correct
- 3) 2 and 3 are correct
- 4) 3 and 4 are correct

136. Which one of the following is used to analyse for the presence of gunshot residues?

- 1) Refractive index measurements
- 2) Polarised light microscopy
- 3) Scanning electron microscopy used in conjunction with energy dispersive X-ray analysis
- 4) Micro-spectro photometry

137. If the plasma activity of an intracellular enzyme is abnormally high all of the following may be a valid explanation EXCEPT :

- 1) The rate of removal of the enzyme from plasma may be depressed
- 2) Tissue damage may have occurred
- 3) Determination of the isozymes distribution may yield useful information
- 4) the rate of synthesis of the enzyme may have increased

138. The process of breaking down triacyl glycerol into free fatty acids and glycerol is called :

- 1) Beta oxidation
- 2) Lipogenesis
- 3) Lipolysis
- 4) Substrate Phosphomylation

139. A active site of an enzyme :

- 1) remains rigid and does not change shape
- 2) is found at the centre of globular enzymes
- 3) is complementary to the rest of the molecule
- 4) contains amino acids without side chains

140. Which of the following is an inborn error of copper metabolism?

- 1) Niemann-Pick
- 2) Wilson's disease
- 3) Bloom's syndrome
- 4) Lockayne syndrome

141. Acrodermatitis enteropathica, an inherited disorder of _____ metabolism.

- 1) Potassium
- 2) Copper
- 3) Sodium
- 4) Zinc

142. Which refers to the organic compound that binds to the apo enzyme and serves as the cofactor?

- 1) Co enzymes
- 2) Substrate
- 3) Allosteric inhibitor
- 4) Cofactor

143. Most of the free fatty acids are transported in the blood :

- 1) as lipo esters
- 2) combined with glucose
- 3) bound to albumin
- 4) bound to antibodies

144. The non-protein molecule which has peptide bond is :

- 1) Biuret
- 2) Cyanuric acid
- 3) Enkephalin
- 4) Urea

145. This is not a fluorescent dye.

- 1) Propidium iodide
- 2) Ethidium bromide
- 3) Acridine orange
- 4) Methylene blue

146. Catalase is used as characteristic marker for :

- 1) Lysosomes
- 2) Golgi membranes
- 3) Mitochondria
- 4) Peroxisomes

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147. Chicken pox is a common disease of childhood. It is caused by which of the following virus?

- 1) Cytome Galo virus
- 2) Rota virus
- 3) Varicella-Zoster virus
- 4) Papilloma virus

148. key factor affecting PCR include all EXCEPT :

- 1) Primer should be 17-30 nt length
- 2) Primer with secondary structure
- 3) Sequences with long runs
- 4) GC content of about 50%

149. The major force linking antigen to antibody are :

- 1) hydrogen bonds
- 2) hydrophobic bonds
- 3) ionic bonds
- 4) covalent bonds

150. The most commonly used Cytokinin in tissue culture is :

- 1) 2, 4-D
- 2) IAA
- 3) NAA
- 4) Zeatin

151. Antidote for cyanide is :

- 1) Dicobalt edetate
- 2) Propanolol
- 3) Naloxone
- 4) Atropine

152. A competitive inhibitor of an enzyme is usually :

- 1) A highly reactive compound
- 2) A metal ion such as Hg^{2+} or Pb^{2+}
- 3) Structurally similar to the substrate
- 4) A poison

153. Fatty acids are transported into the mitochondria by :

- 1) Thiokinase, coenzyme A, acetyl coA
- 2) Carnitine
- 3) Phosphate, thiokinase, acetyl coA
- 4) Coenzyme, acetyl coA

154. Treatment of hemoglobin with 8 M urea causes the molecule to dissociate into :

- 1) $\alpha\alpha$ dimers
- 2) $\beta\beta$ dimers
- 3) $\alpha\beta$ dimers
- 4) α or β monomers

155. How many signals do you expect to see in the ^{13}C NMR spectrum of ethyl benzene?

- 1) 5
- 2) 6
- 3) 4
- 4) 8

156. β -oxidation of fatty acids occurs in :

- 1) Mitochondria only
- 2) Peroxisomes only
- 3) Both in mitochondria and peroxisomes
- 4) In mitochondria, lysosomes and peroxisomes

157. What do we call the viruses that persist in the cell and cause recurrent disease?

- 1) Oncogenic
- 2) Cytopathic
- 3) Latent
- 4) Resistant

158. Mucins are :

- 1) Glyco proteins
- 2) Glyco phorins
- 3) Glyco lipids
- 4) Lipo proteins

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159. Inflammatory response include all the following except :

- ~~1) Vessel constriction~~
- 2) Temperature increase
- ~~3) Increased blood flow~~
- 4) Phagocyte attack

160. Which part of the plant is generally free from virus infections?

- 1) Stem
- 2) Leaf
- 3) Root
- ~~4) Shoot tip~~

161. Which of the following common drugs is NOT a specific enzyme inhibitor?

- 1) Methotrexate
- 2) Penicillin
- 3) Sulphanilamide
- ~~4) Iodine~~

162. Which of the following is a growth hormone?

- 1) Somatostatin
- ~~2) Somatotropin~~
- 3) TSH
- 4) None of these

163. In a β oxidation of one molecule of palmitic acid yields

- 1) 3 molecules of Acetyl coA
- ~~2) 8 molecules of Acetyl coA~~
- 3) 16 molecules of Acetyl coA
- 4) Carbon-dioxide and water

164. Name the carbohydrate linkage found in the glycosylated hemoglobin.

- ~~1) Glycated linkage~~
- 2) Glycosidic linkage
- 3) Phosphodiester linkage
- 4) Ionic linkage

165. Alveolar macrophages are present in :

- 1) Kidney
- ~~2) Lungs~~
- 3) Liver
- 4) Brain

166. The organelles that are surrounded by a single membrane are :

- 1) Nuclear membrane
- ~~2) Microbodies~~
- 3) Endoplasmic reticulum
- 4) Mitochondria

167. Which of the following is the predominant flora of the mouth that is the major cause of dental caries?

- ~~1) α , hemolytic strepto cocci~~
- 2) Lacto bacillus
- 3) S. epidermidis
- 4) E. coli

168. Which of the following is correct regarding degeneracy of the genetic code?

- ~~1) the given amino acid has more than 1 codon~~
- 2) Each codon specifies more than one amino acid
- 3) The first two bases specify the amino acid
- 4) There are 4 start codons

169. This immunoglobulin is found in highest concentration in blood :

- 1) IgM
- ~~2) IgG~~
- 3) IgA
- 4) IgD

170. Brown colour of the callus is due to the presence of :

- 1) Dopa
- ~~2) Phenolic substance~~
- 3) Antho cyanin
- 4) Carotenoid

171. Acute gout is triggered by the tissue deposition of _____ crystals.

- 1) Potassium urate
- 2) Calcium oxylate
- ~~3) Sodium urate~~
- 4) All the above

SCIENTIFIC ASSISTANT - BIOCHEMISTRY

172. A molecule of acetyl cholinesterase normally hydrolyzes about 1000 molecules of acetyl choline each second. After reacting with a nerve gas, such as sarin, the hydrolysis rate of this enzyme would be about :

- 1) 10000 per second
- 2) 1000 per second
- 3) 100 per seconds
- 4) 0 per second

173. Which of the following release high amount of energy when 1 gm is completely oxidised in the body?

- 1) glucose
- 2) sucrose
- 3) palmitic acid
- 4) Protein

174. Transferrin is : I. Glycoprotein with 2 iron binding sites II. B-globulin fraction of serum III. Catalyses the oxidation of Fe^{2+} to Fe^{3+} IV. Synthesized in liver Of these statements ;

- 1) I alone is correct
- 2) I and II are correct
- 3) I, II and III are correct
- 4) I, II and IV are correct

175. In which region of the electro magnetic spectrum does an absorption act 600 nm come?

- 1) Infra red
- 2) Vacuum - UV
- 3) Visible
- 4) Near-UV

176. The smooth endoplasmic reticulum synthesizes :

- 1) Lipids and Steroids
- 2) Protein
- 3) Both proteins and lipids
- 4) Carbohydrates

177. A bacterium is examined and is found to lack superoxide dismutase., catalase and peroxidase. Which of the following statements best describes this bacterium?

- 1) This bacterium is an anaerobe
- 2) This bacterium will survive in O_2 environment
- 3) This bacterium is more virulent than one containing the three enzymes
- 4) This bacterium does not produce superoxide

178. Which of the following is NOT part of RNA processing in Eukaryotes?

- 1) Reverse transcription
- 2) Splicing of exons
- 3) Intron removal
- 4) Addition of 5' cap

179. Which of the following properties of a molecule does not influence antigenicity?

- 1) Conformation
- 2) Color
- 3) Molecular weight
- 4) Structural stability

180. Wound callus is formed by the division of :

- 1) Epidermal cells
- 2) Cortical cells
- 3) Parenchymal cells
- 4) Sclerenchymal cells

181. Human chorionic gonadotrophin is a :

- 1) Glycoprotein
- 2) Glycolipid
- 3) Steroid
- 4) Protein

SCIENTIFIC ASSISTANT - BIOCHEMISTRY

182. The transition state of a catalyzed reaction (EX^\ddagger) is :

- 1) higher in energy than that of an uncatalyzed reaction
- 2) lower in energy than that of an uncatalyzed reaction
- 3) lower in energy than the reaction substrate
- 4) bound very weakly to the catalyst

183. Which of the following promotes glucose and amino acid uptake my muscle?

- 1) Adrenaline
- 2) Insulin
- 3) Glucagen
- 4) Cortisol

184. Match List-I with List-II and select your answer using the codes given below.

List - I	List - II
a. Glucose	1. Music Acid test
b. Fructose	2. Bial's test
c. Galactose	3. Benedict's test
d. Ribose	4. Seliwanoff's test

	a	b	c	d
A.	4	3	1	2
B.	3	1	4	2
C.	2	4	1	3
<input checked="" type="checkbox"/> D.	3	4	1	2

185. A solution of $0.001 \text{ mol dm}^{-3} \text{ NiSO}_4$ is placed in a optical cell of path length 1 cm, and the absorption spectrum recodrred. The absorptions have characteristic λ_{max} and e_{max} values. What are the correct units of e_{max} ?

- 1) $\text{cm dm}^3 \text{ mol}^{-1}$
- 2) $\text{dm}^3 \text{ mol}^{-1} \text{ cm}^{-1}$
- 3) $\text{mol dm}^{-3} \text{ cm}^{-1}$
- 4) cm mol dm^{-3}

186. In which type of suspension culture, finite volume of liquid medium is used :

- 1) Stirred culture
- 2) Continous culture
- 3) Shake culture
- 4) Batch culture

187. An antibody Fab continuous

- 1) H and L chain variable regions
- 2) One antigen binding region
- 3) One H-L interchain disulfide bond
- 4) All of these

188. RNAs that catalyze biological reactions such as self splicing introns are known as :

- 1) Spliceosomes
- 2) Mature RNA
- 3) Lariats
- 4) Ribozymes

189. Nitrification occur in the presence of two bacteria. They are :

- 1) Nitrobacter and nitrosomonas
- 2) Nitrobacter and Acetobacter
- 3) Acetobacter and Nitrosomans
- 4) Acetobacter and Nitromonas

190. The sequential addition of carbohydrate residues to proteins and lipids occurs in :

- 1) Smooth endoplasmic reticulum only
- 2) Rough endoplasmic reticulum only
- 3) Golgi membranes only
- 4) Smooth endoplasmic reticulum and Golgi membranes

