

(Unit-1)

"a)" is the answer for all the question

1. The chemical activity of the cell is organized by _____
a) Cell membrane b) Golgi apparatus
c) Mitochondria d) Lysosomes

2. The major structural component of cell membrane _____
a) Phospholipids b) Proteins
c) Glycocalyx d) Cytoskeleton

3. Proteins and other molecule are embedded in a framework of phospholipids. This type of membrane is called _____
a) Fluid Mosaic b) Solid Mosaic
c) Liquid Mosaic d) Rigid Mosaic

4. A membrane is said to be fluid type, this means _____
a) Most protein & phospholipids can move laterally
b) Proteins & phospholipids are fixed
c) Proteins can only move laterally
d) Phospholipids can only move laterally

5. The cell membrane is embedded with _____
a) Proteins b) Vitamins
c) Carbohydrates d) Minerals

6. The cell membrane does not contain _____
a) Vitamins b) Phospholipids
c) Cholesterol d) Proteins

7. A cell membrane exhibits selective permeability
a) True b) False

8. Integral proteins are on one side of or the other of the membrane
a) False b) True

9. In integral proteins, the hydrophobic regions consist of one or more stretches of _____
a) Non-polar amino acid b) Bi-polar amino acid
c) Polar amino acid d) Hydrophilic amino acids

- 10. Integral proteins are also known as _____**
- a) Trans membrane proteins b)Translocation proteins
c) Transfer proteins d) Transduct proteins
- 11. Integral proteins are often coiled into _____**
- a) Alpha helices b) Beta plates
c) Beta helices d) Alpha plates
- 12. The outer surface of plasma membrane is referred as _____**
- a) Extracellular face b) Cytoplasmic face
c) Intracellular face d) Transmembrane face
- 13. On which side of the membrane Glycoproteins and Glycolipids are attached?**
- a) Extracellular b) Lateral
c) Inside d) Transverse
- 14. Carbohydrates attached to the head of the phospholipids in lipid bilayer _____**
- a) Glycolipids b) Polysaccharides
c) Monosaccharides d) Disaccharides
- 15. How lipid anchored proteins are bonded to membrane?**
- a) Covalently b) Electrostatically
c) Glycocidic bond d) Inter atomic
- 16. Cells recognize each other by binding to surface molecules on_____**
- a) Marker proteins b) Integral proteins
c) Peripheral proteins d)Trans-membrane proteins
- 17. Transport across cellular membrane is regulated by _____**
- a) Selective permeability b) Complete permeability
c) Inclusive permeability d) Total permeability
- 18. Carrier proteins are highly specific for _____**
- a) Transported solutes b) Transported solvents
c) Glucose transporter d) Un-transported solvents
- 19. Carrier proteins bind to solutes and change the shape of _____**
- a) Carrier b) Membrane
c) Solutes d) Solvent

20. Osmosis is the phenomenon of movement of _____ molecules from region of higher concentration to lower concentration across the membrane.
- a) Water b) Solute
- c) Protein d) Lipid
21. The phenomenon of diffusion of water across a selectively permeable membrane is called
- a) Osmosis b) Plasmolysis
- c) Cytolysis d) Hydrolysis
22. In normal osmosis water molecules move from _____ to _____ concentration.
- a) Higher to lower b) Lower to higher
- c) Higher to higher d) Lower to lower
23. In which of the following solution there is no net movement of H_2O _____ across the membrane.
- a) Isotonic solution b) Hypotonic solution
- c) Hypertonic solution d) Cytotoxic solution
24. The process taking place in hypertonic solution is
- a) Plasmolysis b) Cytolysis
- c) Hydrolysis d) Diffusion
25. Hypertonic solution is _____
- a) External solute concentration is greater than inside the cell
- b) External solute concentration is less than inside the cell
- c) External solute concentration is equal to inside the cell
- d) Internal solute concentration is equal to outside the cell
26. In Isotonic solution the size of cell _____
- a) Remain same b) May expand enough to burst
- c) Shrinks d) Swells
27. Water movement in hypotonic solution leads to _____
- a) Cell gain water b) No net water movement
- c) Cell loses water d) Cell shrinks

- 28. Cell kept in hypertonic solution _____**
- a) Shrinks b) Swells
c) No change d) Bursts
- 29. In which type of solution concentration of external solute is greater than that of intracellular concentration of cell _____**
- a) Hypertonic b) Hypotonic
c) Isotonic d) Myotonic
- 30. In which of the following condition there is no net gain of water by the cell _____**
- a) Isotonic b) Hypotonic
c) Hypertonic d) Osmosis
- 31. When external solution is hypotonic to cytosol of a cell, the net movement of water takes place _____**
- a) Into the cell b) Out of the cell
c) Near the cell d) Away from the cell
- 32. Transport across cellular membranes is _____**
- a) To exchange materials with surroundings in part to take in nutrients & give off waste
b) To create hydrophobic channels
c) To create hydrophilic channels
d) To create membrane potential
- 33. How does polar molecule pass across membrane _____**
- a) Slowly b) Rapidly
c) Swiftly d) Stops
- 34. Non-polar molecules are also known as _____**
- a) Hydrophobic molecules b) Heterophobic molecules
c) Homophobic molecules d) Hydrophilic molecules
- 35. Which among the following are all polar molecules _____**
- a) Sugars, charged protein, water b) Sugars, uncharged protein, oxygen
c) CO₂, oxygen, charged proteins d) CO₂, hydrocarbons, oxygen,
- 36. Which among the following can dissolve in the lipid bilayer and pass through the membrane rapidly _____**
- a) Hydrocarbons, oxygen, CO₂ b) Hydrocarbons, Nitrogen, CO₂
c) CO₂, Glucose, oxygen d) Hydrocarbons, Water, CO₂

- 37. The water molecule moves in & out of the cell through _____**
- a) Transport proteins b) Vesicles
c) Glycolipids d) Glycoproteins
- 38. What was Peter Agre's intentional discovery in 1992 _____**
- a) Aquaporins b) Mitochondria
c) Chloroplasts d) Nucleus
- 39. The aquaporins are _____**
- a) Water channels b) Protein channels
c) Lipid channels d) Carbohydrate channels
- 40. Gases such as O₂ and CO₂ pass across the plasma membrane by**
- a) Simple diffusion b) Primary active transport
c) Specific gas transport proteins d) Secondary active transport
- 41. In plant, fungi and bacteria, proton pump in the membrane requires _____**
- a) ATP b) ADP
c) GTP d) GDP
- 42. Na-K pump is usually seen in the membrane of _____**
- a) Animal cells b) Plant cells
c) Fungi and bacterial cells d) Viral cells
- 43. Example for active transport _____**
- a) Sodium-potassium pump b) Sodium-magnesium pump
c) Sodium-Chloride pump d) Sodium-calcium pump
- 44. Na⁺ binding stimulates _____ by ATP.**
- a) Phosphorylation b) Diffusion
c) Facilitated diffusion d) Osmosis
- 45. _____ bonding stimulates phosphorylation by ATP.**
- a) Na⁺ b) Ca⁺⁺
c) K⁺ d) Cl⁻
- 46. Phosphorylation causes _____ to change its conformation**
- a) Protein b) Phospholipid
c) Glycolipid d) Cytoplasm

- 47. Extracellular _____ binds to protein triggering release of phosphate group.**
- a) K⁺ b) Na⁺
c) Mg⁺ d) Ca⁺⁺
- 48. Loss of the _____ restores the protein's original conformation.**
- a) Phosphate b) Ca⁺⁺
c) Na⁺ d) K⁺
- 49. _____ protein uses energy to move solutes against their gradients.**
- a) Active transport b) Channel
c) Carrier d) Passive transport
- 50. Active transport of one solute indirectly drives transport of another.**
- a) True b) False
- 51. The active transport of one solute indirectly drives the transport of another in _____.**
- a) Co-transport b) Diffusion
c) Passive transport d) Facilitated Diffusion
- 52. Large molecules which cannot pass easily through the membrane are _____.**
- a) Polysaccharides and proteins b) Sucrose and water
c) Oxygen and CO₂ d) Hydrocarbons
- 53. The large molecules move in and out of the cell by the help of _____.**
- a) Vesicles b) Osmosis
c) Transport protein d) Diffusion
- 54. Cells take in _____ by forming vesicles at the plasma membrane.**
- a) Macro molecule b) Micro molecule
c) Associated molecule d) Minor molecule
- 55. The “cellular eating” process is _____.**
- a) Phagocytosis b) Pinocytosis
c) Receptor-mediated Endocytosis d) Exocytosis
- 56. The “cellular drinking” process is _____.**
- a) Pinocytosis b) Phagocytosis
c) Receptor-mediated intake d) Exocytosis

- 57. The vesicle is created around fluid in _____**
- a) Pinocytosis b) Phagocytosis
c) Receptor-mediated Endocytosis d) Exocytosis
- 58. Binding of ligands to receptors trigger vesicle formation, the process referred as _____**
- a) Receptor-mediated Endocytosis b) Phagocytosis
c) Pinocytosis d) Exocytosis
- 59. Transport vesicles migrate to the membrane, fuse with it and release the contents, the phenomenon is**
- a) Exocytosis b) Endocytosis
c) Phagocytosis d) Pinocytosis
- 60. In exocytosis vesicles are formed from _____**
- a) ER & Golgi b) Only from Golgi
c) Golgi & Mitochondria d) Only from ER
- 61. Many secretory cells use this mechanism to export their products _____**
- a) Exocytosis b) Endocytosis
c) Osmosis d) Pinocytosis
- 62. Vesicles are used for the transport of _____**
- a) Polysaccharides and proteins b) Sucrose and water
c) Oxygen and CO₂ d) Hydrocarbons
- 63. Nitrogenous waste in an organism's body is produced due to metabolism of amino acids & nucleic acids _____**
- a) True b) False
- 64. Which one is not a Nitrogenous Waste?**
- a) Theanine b) Urea
c) Ammonia d) Uric acid
- 65. Vertebrate's kidney functional units are called as**
- a) Nephrons b) Flame bulbs
c) Malpighian tubules d) Nepridia

66. Internally both kidneys have three distinct regions

- a) The cortex, medulla and pelvis
- b) The cortex, mediastinum and pelvis
- c) The cortex, medulla and peritoneum
- d) The cortex, artery and peritoneum

67. The effect of antidiuretic hormone (ADH) on the kidney is to

- a) Increase the permeability of the distal nephron to water
- b) Increase the excretion of Na^+
- c) Increase the excretion of water
- d) Increase the diameter of the renal artery

68. Heamodialysis unit works on the principle of

- a) Ultrafiltration
- b) Microfiltration c)
- Nanofiltration
- d) Reverse osmosis

69. The membrane module used in in Heamodialysis unit is

- a) Hollow fiber
- b) Spiral wound
- c) Optical wound
- d) Ceramic fiber

70. This is not the limitation of Heamodialysis process

- a) Inexpensive
- b) Time per treatment
- c) Blood clotting
- d) Limited movement

71. During dialysis why the diffusion membrane does swells _____

- a) To reduce diffusive resistance
- b) To increase the pressure
- c) For the passage of large molecules
- d) For the passage of small molecules

72. Recovery of acids from metallurgical liquors can be achieved by

- a) Dialysis
- b) Distillation
- c) Fractionation
- d) Diffusion

73. Which one of the following is the separation principle in Diffusion dialysis _____

- a) Donnan exclusion mechanism
- b) Clavin exclusion mechanism
- c) Donnan inclusion mechanism
- d) Clavin inclusion mechanism

74. Pure NaCl can be obtained from _____

- a) Electro dialysis
- b) Endo dialysis
- c) Haemodialysis
- d) Diffusion dialysis

75. How to obtain potable water from brackish water _____

- a) Electrodialysis
- b) Hydrolysis
- c) Distillation
- d) Chemical method

76. Principles of electro dialysis _____

- a) Opposite charges attract each other
- b) Salts dissolve in water
- c) Salts can pass through membrane
- d) Salts cannot pass through membrane

77. Protein hydrolysates on Electro dialysis produce _____

- a) Amino acids
- b) Glycogen
- c) Gluconoic acid
- d) Citric acid

78. Cellulose hydrolysates on Electro dialysis produce _____

- a) HCl
- b) NaCl
- c) KCl
- d) MgCl₂

79. Thickness of diffusion dialysis membrane _____

- a) 100 – 500μm
- b) 1-5μm
- c) 1000 – 5000μm
- d) 10 – 50μm

80. In reverse osmosis the pressure applied must overcome _____ pressure.

- a) Osmotic
- b) Critical
- c) High
- d) Low

81. The natural osmotic pressure of sea water is around

- a) 390 psi
- b) 3090 psi
- c) 3900 psi
- d) 39 psi

82. In reverse osmosis pressure applied to the membrane is about _____

- a) 600-1200 psi
- b) 60-120 psi
- c) 6000-12000 psi
- d) 6-12 psi

83. What is Desalination _____

- a) Process of removing salt and other minerals from water
- b) Process of adding salt and other minerals to water
- c) Process of adding only salt to water
- d) Process of adding only minerals to water

- 84. Which is the proper method of desalination _____**
- a) Using reverse osmosis membranes to desalinate, applying pressure
 - b) Using semi-permeable membranes and pressure to separate salts from water
 - c) Using membranes to desalinate, applying water osmosis
 - d) Using permeable membrane and pressure to separate salts from water
- 85. Molecular weight cut-off (MWCO) of solutes for micro filtration**
- a) >10,00,000 Daltons
 - b) >1,00,000 Daltons
 - c) >10,000 Daltons
 - d) >1,000 Daltons
- 86. Microfiltration membrane operating pressure**
- a) 100-400 kPa
 - b) 1-4 kPa
 - c) 10-40 kPa
 - d) 1000-4000 kPa
- 87. Ultra filtration membrane operating pressure**
- a) 200-700 kPa
 - b) 2000-7000 kPa
 - c) 20-70 kPa
 - d) 2-7 kPa
- 88. Nano filtration membrane operating pressure**
- a) 600-1000 kPa
 - b) 60-100 kPa
 - c) 6000-10000 kPa
 - d) 6-10 kPa
- 89. Nanofiltration membranes have a nominal pore size of approximately**
- a) 0.001 microns
 - b) 0.01 microns
 - c) 0.1 microns
 - d) 1 microns
- 90. Energy required for Nano filtration (NF) is**
- a) > MF or UF
 - b) < MF
 - c) <UF
 - d) <MF or UF
- 91. The type of pressure required for Micro filtration and ultra-filtration is _____**
- a) Lower than Reverse Osmosis
 - b) Higher than Reverse Osmosis
 - c) Similar to Reverse Osmosis
 - d) No pressure is required
- 92. Nano filtration first developed to remove _____**
- a) Hardness of water
 - b) Odor of water
 - c) Color of water
 - d) Taste of water

- 101. Biochemical investigation reveals that the cell membrane is composed of _____**
- a) Carbohydrate, lipids and proteins
 - b) Proteins and lipids only
 - c) Carbohydrate and protein only
 - d) Carbohydrate and lipids only
- 102. In cell membrane, lipids are arranged in a**
- a) Bilayer
 - b) Monolayer
 - c) Multilayer
 - d) Trilayer
- 103. The molecules in a membrane that limit its permeability are _____**
- a) Phospholipids
 - b) Carbohydrates
 - c) Proteins
 - d) Vitamins
- 104. Which of the following statements is not true about the cell membrane?**
- a) Carbohydrates are never found in it
 - b) It is present in both plant and animal cells
 - c) Proteins may be peripheral or integral in it
 - d) Lipid is present in it as bilayer
- 105. According to the fluid mosaic model of the cell membrane, the proteins are located**
- a) Continuous arrangement, both on the surface and in the interior of the membrane
 - b) Continuous layer over the outer surface of the membrane only
 - c) Continuous layer only the inner surface
 - d) In the middle of the membrane, between the lipid layers only
- 106. According to the modern concept, cell membrane is**
- a) Fluid
 - b) Solid
 - c) Quasi fluid
 - d) Solidified sheath
- 107. The fluid mosaic model explains _____**
- a) Both the structural and functional aspects of the cell membrane
 - b) Only the functional aspects of the cell membrane
 - c) Only the structural aspects of the cell membrane
 - d) Only fluidity of the membrane

- 108. The head and tail of a phospholipid are connected by**
- a) Glycerol
 - b) Acetol
 - c) Sterol
 - d) Cholesterol
- 109. The phospholipid head is**
- a) Hydrophilic
 - b) Hydrophobic
 - c) Basophilic
 - d) Basophobic
- 110. The tail of a phospholipid is made of**
- a) Lipids
 - b) Carbohydrates
 - c) Proteins
 - d) Nucleic acids
- 111. The phospholipid tail is**
- a) Hydrophobic
 - b) Acidophilic
 - c) Hydrophilic
 - d) Acidophobic
- 112. Which of the following is a major function of the cell membrane?**
- a) Regulates which materials enter and leave the cell
 - b) Breaks down lipids, carbohydrates, and proteins from foods
 - c) Stores water, salt, proteins, and carbohydrates
 - d) Keeps the cell wall in place
- 113. What is the function of the cholesterol in the cell membrane?**
- a) Stability for lipid bilayer
 - b) Pumps and channels
 - c) Break down organelles
 - d) Cellular respiration
- 114. What is the major function of the proteins in the cell membrane?**
- a) Cellular transport
 - b) Photosynthesis
 - c) Cellular respiration
 - d) Break down organelles
- 115. Some molecules can pass through a cell membrane without help.**
- a) True
 - b) False
- 116. All eukaryotic cells are surrounded by a cell membrane.**
- a) True
 - b) False
- 117. Which method of transport moves substances in or out of the cell that requires energy?**
- a) Active transport
 - b) Facilitated diffusion
 - c) Osmosis
 - d) Diffusion

118. All proteins found in the cell membrane cross to the outside of the cell.

- a) False b) True

119. The only difference between diffusion and facilitated diffusion is

- a) Facilitated diffusion uses protein channels to move substances in or out of the cell.
b) Diffusion requires energy.
c) Facilitated diffusion requires energy.
d) Facilitated diffusion always moves substances from low to high concentration.

120. Sodium and potassium ions are transported across the membrane by which protein?

- a) Carrier b) Transduct
c) Enzymatic d) Cell-recognition

121. Most of the ion channels are lined by_____

- a) Proteins b) Carbohydrates
c) Nucleic acids d) Vitamins

122. Most of the ion channels that have been identified till date are of which conformation?

- a) Open or closed b) Only open
c) Only closed d) Neither open nor closed

123. Which of the following statements is NOT correct about the membrane transport?

- a) Charged molecules and ions readily move from inside the cell to outside the cell.
b) Lipid molecules have little difficulty in crossing the plasma membrane.
c) Small non-charged molecules easily cross the membrane
d) Oxygen readily follows its concentration gradient as it enters a cell.

124. Which of the following is an active method of transport across the membrane?

- a) Sodium-Potassium pump b) Diffusion
c) Facilitated diffusion d) Osmosis

125. The cell get rid of waste products and push them out of the cell, by which process?

- a) Exocytosis b) Endocytosis
c) Phagocytosis d) Pinocytosis

126. Which of the following transport processes will form a vesicle?

- a) Endocytosis b) Osmosis
c) Sodium-potassium pump d) Facilitated diffusion

- 127. Pinocytosis is a type of _____**
- a) Endocytosis b) Exocytosis
c) Simple diffusion d) Facilitated diffusion
- 128. Which of the following conditions does NOT apply to diffusion?**
- a) Diffusion continues even after the molecules are distributed equally.
b) Diffusion is a passive process.
c) Molecules move from higher to lower concentration.
d) Diffusion does not necessarily require a membrane.
- 129. Crystals of dye, when placed in a beaker of water, eventually spread evenly throughout the water. This is an example of _____.**
- a) Simple diffusion b) Facilitated diffusion
c) Active transport d) Pinocytosis
- 130. Lipid-soluble molecules and gases enter the cell by _____**
- a) Diffusion through the lipid bilayer
b) Diffusion through the channel proteins
c) Osmosis through the channel proteins
d) Osmosis through the lipid bilayer
- 131. Water passes into and out of cells through the _____**
- a) Water receptor proteins b) Lipid bilayer
c) Cell-recognition proteins d) Transduct proteins
- 132. A plant cell is placed in a hypertonic solution, what will most likely happen to the cell?**
- a) Water moves out of the cell causing it to shrink
b) Salt moves out of the cell causing it to shrink
c) Water moves into the cell causing it to burst.
d) Salt moves into the cell causing it to burst.
- 133. Which type of solution will cause cells to swell?**
- a) Hypotonic solution b) Isotonic solution
c) Hypertonic solution d) Hydroponic solution
- 134. Which type of solution will have a higher percentage of solute than the cell?**
- a) Hypertonic solution b) Hypotonic solution
c) Isotonic solution d) Cytotoxic solution

- 135. Which type of solution has a lower percentage of solute than the cell?**
- a) Hypotonic solution b) Hypertonic solution
c) Isotonic solution d) Cytotoxic solution
- 136. Which term describes the condition of cells when placed in a hypotonic solution?**
- a) Cytolysis b) Plasmolysis
c) Hemolysis d) Hydrolysis
- 137. Which of the following conditions does NOT apply to facilitated transport?**
- a) It requires ATP
b) Transports molecules down the concentration gradient
c) Transports molecules from one side of the membrane to the other side
d) Transports molecules through the membrane much faster than simple diffusion
- 138. Diffusion will cease once both solute and solvent molecules are evenly distributed.**
- a) True b) False
- 139. Passage of molecules across the membrane by passive ways involves the use of energy.**
- a) False b) True
- 140. Which of the following processes uses a carrier protein and ATP?**
- a) Active transport b) Facilitated diffusion
c) Passive transport d) Osmosis
- 141. Which of the following conditions does NOT apply to active transport?**
- a) Transports molecules from a high to low concentration area
b) Requires ATP
c) Requires a carrier protein
d) Carrier proteins bind reversibly to transported substances
- 142. Which process will transport sodium ions to the outside of the cell and potassium ions to the inside of the cell?**
- a) Active transport b) Facilitated diffusion
c) Passive transport d) Osmosis
- 143. The sodium-potassium pump is considered to be a (an) _____ process.**
- a) Active transport b) Facilitated diffusion
c) Osmosis d) Passive transport

144. Which of the following processes does not use a carrier protein to transport substances across the plasma membrane?

- a) Osmosis
- b) Sodium-potassium pump
- c) Facilitated diffusion
- d) Active transport

145. Which of the following comparison is not correct?

- a) Hypotonic solution--cells shrinks
- b) Endocytosis- solute entering cell
- c) Active transport-against the gradient
- d) Facilitated diffusion--with the gradient

146. Which one is false about osmosis?

- a) It occurs through a carrier protein and needs ATP
- b) It is specific form of diffusion
- c) It refers to the movement of water along its concentration gradient
- d) It is passive movement of water

147. Neutral solutes may move across the membrane by a process of simple _____ and _____ concentration gradients.

- a) Diffusion, along
- b) Method, against
- c) Transport, against
- d) Active transport, along

148. Diffusion is the movement of molecules from

- a) An area of high concentration to an area of low concentration.
- b) An area of low concentration to an area of high concentration.
- c) An area of equilibrium to an area of high concentration.
- d) An isotonic solution to a hypotonic solution

149. The urinary system is also known as:

- a) The renal system
- b) The gastric system
- c) The endocrine system
- d) The cardiac system

150. The blood plasma in kidney is filtered at about how many litres per day?

- a) 150-200
- b) 1-5
- c) 10-15
- d) 0.1-0.5

151. Bowman's capsule of Kidney contains

- a) Podocytes
- b) Collecting duct
- c) Ascending limb
- d) Descending limb

152. In Kidney filtration, The glomerular filtrate is destined to become the

- a) Urine
- b) Plasma
- c) Blood
- d) Urea

153. For the renal glucose carriers, saturation occurs when the concentration of glucose in the blood is about _____ mg per 200ml of blood.

- a) 180 mg
- b) 18 mg
- c) 1.8 mg
- d) 0.18 mg

154. The nitrogenous waste disposal system of flatworm is

- a) Protonephridia
- b) Metanephridia
- c) Malpighian tubules
- d) Kidneys

155. A specialized excretory cell found in flatworm is

- a) Flame bulb
- b) Cortical bulb
- c) Renal bulb
- d) Pelvic bulb

156. The nitrogenous waste disposal system of annelids is

- a) Metanephridia
- b) Protonephridia
- c) Kidneys
- d) Malpighian tubules

157. The nitrogenous waste disposal system of arthropod is

- a) Malpighian tubules
- b) Protonephridia
- c) Kidneys
- d) Metanephridia

158. In further improvement of Hemodialysis, which is incorrect

- a) Increase Dialysis Time
- b) Increase Efficiency in Filtration
- c) Increase Portability
- d) Recycling of Dialysate

159. In Dialysis, the removal of metal ions is facilitated by addition of a chelating agent

- a) EDTA
- b) FAD
- c) NADH
- d) NAD

160. In Electro dialysis which gas is generated at the cathode?

- a) Hydrogen
- b) Oxygen
- c) Nitrogen
- d) Caron Dioxide

161. In Electro dialysis which gas is generated at the anode?

- a) Oxygen
- b) Hydrogen
- c) Nitrogen
- d) Caron Dioxide

162. In Electro dialysis, the anion exchange permeable membranes contains negatively charged groups.

- a) False
- b) True

163. Which is not the stage of Natural Desalination?

- a) Sublimation
- b) Evaporation
- c) Condensation
- d) Precipitation

164. In membrane filtration, periodic pulsing filtrate is also known as _____

- a) Back washing
- b) Front washing
- c) Side washing
- d) Clear washing

**(Unit
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“a)” is the answer for all the question

- 165. Concentration of Na^+ is greater in _____**
- a) Extracellular fluid b) Cytoplasm
c) Cell membrane d) Intracellular fluid
- 166. Cytoplasm has higher concentration of _____**
- a) K^+ ions b) Na^+ ions
c) Cl^- ions d) Ca^{++} ions
- 167. The membrane potential inside the cell is _____**
- a) Negative b) Positive
c) Neutral d) Cannot be determined
- 168. Equilibrium potential is also called as_____**
- a) Reversal potential b) Forward potential
c) Negative potential d) Positive potential
- 169. Equilibrium potential of a membrane is measured in _____**
- a) mV b) kV
c) μV d) pV
- 170. The resting membrane potential for a typical neuron**
- a) -70mV b) -20mV c) +70mV d) +20mV
- 171. Resting membrane potential is maintained by**
- a) Ion pumps b) Hormones
c) Neurotransmitters d) Growth factors
- 172. Which of the following is not a part of a neuron?**
- a) Lobe b) Synaptic cleft
c) Nucleus d) Dendrite
- 173. Axon sends signals away from neurons whereas _____ receive signals from other neurons.**
- a) Dendrites c) Synapse
c) Nucleus d) Nodes of Ranvier
- 174. The spaces between the myelin covered parts of an axon are called**
- a) Nodes of Ranvier b) Synapse
c) Dendrites d) Myeline

- 175. The Na⁺ ions diffusion creates positive state inside the cell membrane, this is**
- a) Depolarization
 - b) Repolarization
 - c) Hyperpolarization
 - d) Overshoot
- 176. The diffusion of K⁺ out of the cell makes the cell to restore the original resting membrane potential - this process is**
- a) Repolarization
 - b) Depolarization
 - c) Hyperpolarization
 - d) Overshoot
- 177. K⁺ ions rush out of the cell, repolarization occurs and then cell reaches**
- a) Hyperpolarization
 - b) Repolarization
 - c) Depolarization
 - d) Overshoot
- 178. Motor neuron sends a signal to the muscle cell at**
- a) Neuromuscular junction
 - b) Neuroarticular junction
 - c) Neurocardiac junction
 - d) Neuroureitary junction
- 179. The neurotransmitter responsible for muscle contraction**
- a) Acetyl choline
 - b) Acetic acid
 - c) Dopamine
 - c) Serotonin
- 180. The ions involved in the muscle contraction signal transduction**
- a) Ca⁺⁺ ions
 - b) Na⁺ ions
 - c) Cl⁻ ions
 - d) K⁺ ions
- 181. The action potential follows this law**
- a) All or none
 - b) One and One
 - c) One and all
 - d) Only one
- 182. There is a _____ period immediately after the action potential**
- a) Refractory
 - b) Rotatory
 - c) Reflectory
 - d) Retractory
- 183. Myelination provides insulation for _____**
- a) Ions
 - b) Proteins
 - c) Lipids
 - d) Vitamins
- 184. The action potential propagation mechanism**
- a) Saltatory conduction
 - b) Passive conduction
 - c) Active conduction
 - d) Continuous conduction

185. Potential for movement of ion; outside the membrane by convention is _____

- a) 0Mv
- b) -1mV
- c) 1mV
- d) 0.1mV

186. Which of the following statements about action potentials (AP) and information transmission in the synaptic cleft is false?

- a) AP ultimately results in more calcium leaving target cell at the post synaptic membrane.
- b) AP determines the amount of neurotransmitters that are released into the synaptic cleft. c)
- AP ultimately results in more calcium entering the neuron at the axon terminal.
- d) AP determines the duration that neurotransmitters are released into the synaptic cleft.

187. Which channel plays a role in the release of neurotransmitters into the synaptic cleft?

- a) Voltage-gated calcium channels
- b) Voltage-gated sodium channels
- c) Voltage-gated potassium channels
- d) Both voltage-gated potassium and sodium channels

188. Which term describes the space between a neuron and its target cell?

- a) Synaptic cleft
- b) Post synaptic membrane
- c) Dendritic spine
- d) Axon terminal

189. Most mammalian axons are

- a) Myelinated
- b) Hydrated
- c) Saltated
- d) Radiated

190. Myelin is _____rich substance

- a) Lipid
- b) Protein
- c) Vitamin
- d) Carbohydrate

191. During action potential, when the excitation threshold is reached there is a sudden large

- a) Depolarization
- b) Hyperpolarization
- c) Repolarization
- d) Overshoot

192. The action potential begins with

- a) Partial depolarization
- b) Partial repolarization
- c) Partial hyperpolarization
- d) Partial overshoot

193. After an action potential, the membrane becomes more negative than -70 mV. This period is called:

- a) Hyperpolarization
- b) Depolarization
- c) Repolarization
- d) Overshoot

194. Repolarization is caused by the movement of_____

- a) Potassium; out of the cell
- b) Sodium; into the cell
- c) Potassium; into the cell
- d) Sodium; out of the cell

195. Vast majority of the channels open in the plasma membrane of a resting cell (nerve cell) are selective to____ions

- a) K⁺
- b) Na⁺
- c) Ca²⁺
- d) Cl⁻

196. Equilibrium potential for K⁺ ions in most vertebrates is a value of approximately

- a) -90Mv
- b) -200mV
- c) +90Mv
- d) +200mV

197. A value slightly more negative than the resting membrane potential is

- a) Undershoot
- b) Overshoot
- c) Threshold
- d) Depolarization

198. An action potential propagated down the length of the nerve fiber as

- a) Nerve impulse
- b) Nerve action
- c) Nerve potential
- d) Nerve charge

199. Action potential in the myelinated axons are produced only at the

- a) Nodes of Ranvier
- b) Axon
- c) Dendrites
- d) Nerve ending

200. The inward diffusion of _____ion during an action potential at one node depolarizes the next node down the axon

- a) Na⁺
- b) K⁺
- c) Ca²⁺
- d) Cl⁻

“a)” is the answer for all the question

1. The thick filament is composed of what molecule?

- a) Myosin
- b) Troponin
- c) Actin
- d) Tropomyosin

2. The head of the myosin molecule binds to what molecule to form the cross bridge?

- a) Actin
- b) Troponin
- c) Tropomyosin
- d) Titin

3. What regulatory molecule that covers the myosin head binding site on actin?

- a) Tropomyosin
- b) Troponin
- c) Nebuline
- d) Actinin

4. Which molecule on the thin filament has a binding site for calcium?

- a) Troponin
- b) Tropomyosin
- c) Actinin
- d) Titin

5. The binding of what to the myosin head puts the cross bridge in its high-energy conformation?

- a) ATP
- b) Actin
- c) Calcium
- d) Sodium

6. What must bind to the cross bridge for it to disconnect from the actin molecule?

- a) ATP
- b) Tropomyosin
- c) Calcium
- d) Troponin

7. Which molecule is responsible for moving the calcium back into the terminal cisternae?

- a) ATP
- b) Myosin
- c) Actin
- d) Troponin

8. What causes the sliding of the thin filament toward the middle of the sarcomere?

- a) Flexing of the cross bridge (power stroke)
- b) Binding of ATP to the myosin head
- c) Binding of the myosin head
- d) Binding of calcium to the troponin

9. Which of the following does not shorten during muscle contraction?

- a) Thin filament
- b) The sarcomere
- c) I band
- d) H-zone

10. In a muscle fiber, the cell membrane is called _____.

- a) sarcolemma
- b) sarcoplasm
- c) sarcoplasmic reticulum
- d) myofibril

11. The two types of protein filaments in sarcomeres are tropomyosin and troponin.

- a) False
- b) True

12. This is the explanation of how muscles contract.

- a) Sliding filament model
- b) Fluid Mosaic model
- c) Cell Theory
- d) Lock and Key Hypothesis

13. According to the sliding filament theory, _____ is/are the filament(s) that slides

- a) Actin
- b) Myosin
- c) Neuromuscular junctions
- d) Tropomyosin

14. The contractile elements of muscle fibers are called _____.

- a) Myofibrils
- b) Sarcoplasm
- c) Sarcoplasmic reticulum
- d) Tendons

15. A sarcomere extends between two dark _____ lines.

- a) Z
- b) H
- c) I
- d) M

16. A muscle contraction begins with release of _____, which reaches a sarcolemma, depolarizing the sarcolemma.

- a) Acetylcholine
- b) Calcium
- c) ATP
- d) Lactic acid

17. The sliding filament theory of muscle contraction involves

- a) Calcium ions binding with troponin, which shifts tropomyosin and allows the myosin-binding sites on actin to be exposed
- b) Calcium ions releasing ATP for energy
- c) Neuromuscular junctions directly producing the movement of actin and myosin
- d) Actin filaments moving the myosin filaments in each sarcomere

18. This is the direct source of the energy for muscle contraction.

- a) ATP
- b) Calcium ions
- c) Potassium ions
- d) Mitochondria

19. The basic unit of contraction is the

- a) sarcomeres
- b) actin
- c) myosin
- d) Z-Lines

20. A cord or strap of dense tissue that connects a muscle to bone is called as _____

- a) Tendon
- b) Ligament
- c) Fasciculi
- d) Nuclei

21. The actin and myosin filaments in muscle composed of _____

- a) Proteins
- b) Fatty acids
- c) Nucleic acids
- d) Carbohydrates

22. What triggers the release of calcium ions from the sarcoplasmic reticulum?

- a) An action potential
- b) Sarcomere contraction
- c) Formation of actin-myosin cross-bridges
- d) An increase in calcium ion concentration

23. DNA backbone, outside the double helix is made up of

- a) Phosphate and sugar
- b) sugar and nitrogen
- c) Nitrogen and carbon
- d) phosphate and nitrogen

24. Adenine and Thymine form two Hydrogen bonds, while Guanine and Cytosine form three

- a) True
- b) False

25. Two strands of DNA in a double helix structure, coiled with each other as

- a) anti- parallel
- b) parallel
- c) Opposite
- d) inter-connected

26. Which of the following statement is true related to DNA

- a) The two DNA strands are anti-parallel and complementary
- b) The two DNA strands are parallel and complementary
- c) The two DNA strands are parallel and non- complementary
- d) The two DNA strands are anti parallel and non-complementary

27. The two strands in a DNA double helix are joined by

- a) Hydrogen bonds between bases
- b) Phosphodiester bonds between sugars
- c) Hydrogen bonds between sugars
- d) Phosphodiester bonds between bases

28. DNA structure, inside basis of double helix is made up of

- a) Nitrogen
- b) oxygen
- c) Phosphorus
- d) magnesium

29. Which of this is not a feature of DNA?

- a) Ionic bonding between nitrogenous base pairs
- b) Antiparallel strands forming double helix
- c) Complementary base pairing
- d) Sugar phosphate backbone

30. This is the purine nitrogenous base of DNA

- a) Guanine
- b) Thymine
- c) Cytosine
- d) Uracil

31. This is not the pyrimidine nitrogenous base

- a) Adenine
- b) Uracil
- c) Cytosine
- d) Thymine

32. Who proposed the information theory in communication industry?

- a) Shannon
- b) Feynman
- c) Adleman
- d) Watson

33. The idea of individual molecules could be used for computation was proposed by

- a) Feynman
- b) Shannon
- c) Adleman
- d) Watson

34. The concept of DNA computing was introduced by

- a) Adleman
- b) Shannon
- c) Feynman
- d) Watson

35. This is not the limitation of DNA computer at present

- a) It is competitive with the state-of-the-art algorithms on electronic computers
- b) Time consuming laboratory procedures
- c) There are sometimes errors in the pairing of DNA strands
- d) No universal method of data representation

36. This is not the hidden factors affecting complexity of DNA computers

- a) Complementarities of DNA makes it unique for error corrections
- b) Arbitrary number of test tubes to be used for experiments
- c) Unrealistic assessment of how reactant concentrations scale with problem size
- d) DNA, in vitro (in the lab) decays

37. The powerful computing power of DNA computers can be used in future for _____

- a) All of these
- b) Genetic programming
- c) Language systems
- d) Data Encryption

38. Who drew the first aircraft design art?

- a) Leonardo da Vinci
- b) Donatello
- c) Michelangelo
- d) Raphael

39. The aircraft design art drawn during, 14th century was named as _____

- a) Helical air screw
- b) Elliptical air screw
- c) Rounded air screw
- d) Axial air screw

40. The Wright brothers' first flight name is _____

- a) Flyer 1
- b) Trailer 1
- c) Arial 1
- d) Helical 1

41. By observing the birds flying mechanism, the Wright brothers are able to control their airplane by

- a) Wing warping method
- b) Wing wrapping method
- c) Wing folding method
- d) Wing stretching method

42. The contour of bird wing design shows

- a) Minimum resistance for wind
- b) Maximum resistance for wind
- c) No resistance for wind
- d) Threshold resistance for wind

43. The aspect ratio in the wing design is

- a) Length to width
- b) Width to length
- c) Length to thickness
- d) Width to thickness

44. In the birds wing the aspect ratio varies from

- a) 1.5-18
- b) 1.5-1.8
- c) 15-18
- d) 150-180

45. As the aspect ratio increases in the wing design, the flight adaptability is

- a) Better
- b) Worse
- c) No change
- d) Cannot be determined

46. When air moves over the wing, the air pressure above the wing

- a) Decreases
- b) Increases
- c) Remains same
- d) cannot be determined

47. When air moves over the wing, the air pressure below the wing

- a) Increases
- b) Decreases
- c) Remains same
- d) cannot be determined

48. The blades at the hind edge of the wings of an air plane are withdrawn while on

- a) Gliding
- b) Landing
- c) Take off
- d) On runway

49. In the airplane, wing blades at the hind edge are extended and thrusted downward while

- a) Landing b) Take off c) Gliding d) On runway

50. A bird can change its wing shape by the help of

- a) Feathers b) Legs c) Knees d) Beaks

51. The inventor of modern helicopter

- a) Igor Sikorsky b) Louis-Charles c) Jacques Breguet d) Wright brothers

52. The helicopter analogy is with this living creature

- a) Dragonfly b) Butterfly c) Honey bee d) Birds

53. The insect having extremely complex flight mechanism and eye structure is

- a) Dragonfly b) Butterfly c) Honey bee d) Beetle

54. How many sets of wings the Dragon fly consists?

- a) Two b) Three c) Four d) One

55. Which part serves to stabilize the helicopter during its flight?

- a) Tail Rotor b) Rotor Mast c) Rotor blades d) Tail boom

56. Helicopter changes course by altering angle of attack by the help of

- a) Mechanical levers b) Electrical cables c) Landing skids d) Cockpits

57. The whale body contour almost resembles to

- a) Submarine b) Airplane c) Helicopter d) Cruise ship

58. The first submarine that did not rely on human propulsion for momentum is _____

- a) Plongeur b) Turtle c) Flyer 1 d) Sikorsky-R4

59. The submarines works on the sink and float mechanisms based on the principles of

- a) Density b) Viscosity c) Elasticity d) Compressibility

60. Echolocation calls are usually ultrasonic--ranging in frequency from

- a) 20-200 KHz b) 2-20 KHz c) 0.2-2KHz d) 200-2000KHz

61. Which creatures use sound waves to locate objects _____

- a) Bat and Whales b) Dragonflies and Butterflies
c) Sea Gulls and Waders d) Pheasants and Eagles

62. Bats sense their direction through

- a) Echolocation
- b) Sense of sight
- c) Wings
- d) Nose

63. Along with the position information, bats can also discriminate objects based on

- a) All of these
- b) Shape
- c) Size
- d) Texture

64. Which two types of ultrasonic signals are emitted by the bats?

- a) Frequency modulated, constant Frequency
- b) Frequency demodulated, varying frequency
- c) Frequency modulated, varying frequency
- d) Frequency demodulated, constant frequency

65. The acoustic lens of Whale is called as _____

- a) Melon
- b) Nasal Sac
- c) Lower jaw bones
- d) Blow hole

66. The echolocation signals are received by this part of a Whale head _____

- a) Lower jaw bones
- b) Melon
- c) Nasal Sac
- d) Blow hole

67. Artery leaving from left ventricle of heart is

- a) Aorta
- b) Pulmonary artery
- c) Inferior vena cava
- d) Superior vena cava

68. The artery carrying blood from the right ventricle of the heart to the lungs for oxygenation

- a) Pulmonary artery
- b) Aorta
- c) Inferior vena cava
- d) Superior vena cava

69. Blood from various parts of body is returned to the _____

- a) Right atrium
- b) Right ventricle
- c) Left ventricle
- d) Left atrium

70. Heart receives oxygenated blood from

- a) Lungs
- b) Liver
- c) Kidneys
- d) Spleen

71. Valve that prevents blood backflow to right atrium from right ventricle is

- a) Tricuspid valve
- b) Bicuspid atria
- c) Bicuspid valve
- d) Tricuspid atria

72. After receiving blood from lungs, heart pumps it to the

- a) Entire body
- b) Left atria
- c) Arms and legs
- d) Right atria

73. Oxygenated blood is brought to left atrium from lungs through

- a) Pulmonary veins b) Pericardial veins
- c) Pulmonary artery d) Pericardial artery

74. What does the pulmonary artery do?

- a) Pumps deoxygenated blood from the right ventricle to the lungs
- b) Pumps deoxygenated blood from the body to the right atrium
- c) Pumps oxygenated blood from the left ventricle to the rest of the body
- d) Pumps oxygenated blood from the lungs to the left atrium

75. What does the pulmonary vein do?

- a) Pumps oxygenated blood from the lungs to the left atrium
- b) Pumps deoxygenated blood from the body to the right atrium
- c) Pumps deoxygenated blood from the right atrium to the lungs
- d) Pumps oxygenated blood from the lungs to the right atrium

76. Which type of blood vessels carries blood away from the heart?

- a) Arteries b) Veins
- c) Superior vena cava d) Inferior vena cava

77. The left side of the heart is responsible for pumping:

- a) Oxygenated blood to the body b) Oxygenated blood to the lungs
- c) Deoxygenated blood to the body d) Deoxygenated blood to the lungs

78. Which area of the heart is known as the "pacemaker"?

- a) SA node b) AV node
- c) Purkinje Fibers d) Bundle of His

79. The SA node is located in the Left atrium.

- a) False b) True

80. Which area of the heart is responsible for the delay of conduction between the atrium and ventricles?

- a) AV node b) SA node
- c) Bundle of His d) Purkinje Fibers

81. The delay of conduction between the atrium and ventricles is about _____

- a) 0.1 second b) 1 second
- c) 10 seconds d) 1 minute

82. The first peak in the ECG recording, P, is produced by the

- a) Atrial depolarization
- b) Ventricular depolarization
- c) Ventricular repolarization
- d) Atrial repolarization

83. In the ECG recording, the larger peak, QRS, is produced by

- a) Ventricular depolarization
- b) Atrial depolarization
- c) Ventricular repolarization
- d) Atrial repolarization

84. In the ECG recording, the last peak, T, is produced by

- a) Ventricular repolarization
- b) Atrial depolarization
- c) Ventricular depolarization
- d) Atrial repolarization

85. A pacemaker system consists of

- a) Pulse generator, leads
- b) Expansion generator, leads
- c) Atrium blocker, leads
- d) Ventricle blocker, leads

86. The name given to the condition in which the electrical impulses may be blocked along the pathway through the heart_____

- a) Heart block
- b) Heart attack
- c) Heart impulse
- d) Heart Clog

87. A single-chamber pacemaker paces _____

- a) Right/left atrium or right/left ventricle
- b) Left atrium only
- c) Right atrium only
- d) Right ventricle only

88. The weight /mass of the pacemaker is about _____

- a) 22-50 gms
- b) 2.2-5 gms
- c) 220-500 gms
- d) 0.22-0.5 gms

89. The Dual-chamber pacemaker senses _____

- a) Both atrial and ventricular activity
- b) Only right atrial activity
- c) Only left ventricular activity
- d) Only right ventricle activity

90. The Biventricular-chamber pacemaker paces _____

- a) Right/left atrium and both right/left ventricle
- b) Left atrium only
- c) Right ventricle only
- d) Left ventricle only

“a)” is the answer for all the question

91. In which type of pacemaker the patient body serves as the grounding source

- a) Unipolar
- b) Bipolar
- c) Multipolar
- d) Non-polar

92. In which type of pacemaker there is less chance for electromagnetic interference

- a) Bipolar
- b) Unipolar
- c) Multipolar
- d) Non-polar

93. Visible part of the ear is called

- a) Ear pinna
- b) Basilar membrane
- c) Eardrum
- d) Tympanum

94. Which of the following connects the external ear with the inner structures?

- a) External Auditory canal
- b) Ear drum
- c) Eustachian tube
- d) Basilar membrane

95. The delicate membrane at the end of the external auditory canal is

- a) Tympanum
- b) Malleus
- c) Stapes
- d) Incus

96. The ear part balancing the air pressures within the middle ear and in the atmosphere is

- a) Eustachian tube
- b) Ear drum
- c) External Auditory canal
- d) Basilar membrane

97. Which of the following is not the part of middle ear _____

- a) Pinna
- b) Malleus
- c) Staples
- d) Incus

98. Which bone is connected with oval windows _____

- a) Stapes
- b) Malleus
- c) Incus
- d) Pelvic

99. Which part is the pressure equalizer of middle ear and environment?

- a) Pharyngotympanic tube
- b) Osicles
- c) External Auditory canal
- d) Tympanic membrane

100. Other name for ear drums _____

- a) Tympanum
- b) Osicles
- c) Malleus
- d) Incus

101. The incus bone resembles this structure

- a) Anvil
- b) Hammer
- c) Stirrup
- d) Drum

102. The malleus bone resembles to this structure

- a) Hammer
- b) Anvil
- c) Stirrup
- d) Drum

103. The stapes resembles to this structure

- a) Stirrup
- b) Hammer
- c) Anvil
- d) Drum

104. Cochlea is present in _____

- a) Inner ear
- b) Outer ear
- c) Middle ear
- d) Eustachian tube

105. Basilar membrane is located above _____

- a) Scala tympani
- b) Scala vestibular
- c) Tectorial membrane
- d) Scala media

106. Which part of the ear breaks sound up into its component frequencies?

- a) Cochlea
- b) Ossicles
- c) Ear drum
- d) Pinna

107. These structures serve as proper receptors for hearing

- a) Inner hair cells
- b) Oval window
- c) Auditory canal
- d) Eardrum

108. According to Bekesy's Hearing Theory, the base of cochlea perceives

- a) High frequency sound
- b) Medium frequency sound
- c) Low frequency sound
- d) Equal frequency sound

109. According to Bekesy's Hearing Theory, the top of cochlea perceives

- a) Low frequency sound
- b) Medium frequency sound
- c) High frequency sound
- d) Equal frequency sound

110. Sound wave amplifies at _____

- a) Middle ear
- b) Outer ear

- c) Cochlea
- d) Auditory canal

111. Since 1972 more than _____ different cochlear implants have been done.

- a) 16
- b) 17
- c) 18
- d) 19

112. The hearing aids in the ear

- a) Makes sound louder
- b) Makes sound smoother
- c) Makes sound silent
- d) Makes sound noiseless

113. The cochlear implants in the ear

- a) Bypass the damaged hair cells of the inner ear
- b) Bypass the sound signals to the brain
- c) Makes sound noiseless
- d) Makes sound silent

114. Variation of focal length to form a sharp image on retina is called

- a) Accommodation
- b) Aperture
- c) Retina control
- d) Refraction

115. In normal vision the image is formed

- a) On the retina
- b) In front of the retina
- c) Behind the retina
- d) In between lens and cornea

116. Light enters eye through a transparent membrane known as

- a) Cornea
- b) Pupil
- c) Retina
- d) Iris

117. Colored portion of eye that controls amount of light reaching retina is known as

- a) Iris
- b) Cornea
- c) Sclera
- d) Retina

118. What is the name of the outer white wall over the eyeball?

- a) Sclera
- b) Pupil
- c) Retina
- d) Iris

119. The size of the pupil is controlled by which of these?

- a) Iris
- b) Cornea
- c) Retina
- d) Sclera

120. Which of the following is true about a person suffering from myopia?

- a) Can see nearby objects
- b) Cannot see nearby objects
- c) Distant objects appears clearly
- d) Nearby objects appears blurry

121. Which type of lens is needed to rectify the problem of myopia?

- a) Biconcave lens
- b) Biconvex lens
- c) Plano-concave lens
- d) Plano-convex lens

122. Bi-convex lens is advised to a patient suffering from which of these conditions?

- a) Hypermetropia
- b) Myopia
- c) Emmetropia
- d) Cataract

123. The change in focal length of an eye lens to focus the image of objects at varying distances is done by the action of

- a) Ciliary muscles
- b) Pupil
- c) Retina
- d) Blind spot

124. Power of a lens is expressed in

- a) Dioptrē
- b) Centimetre
- c) Metre
- d) Millimetre

125. The fluid between the retina and the lens is called_____

- a) Vitreous humor
- b) Aqueous humor
- c) Liquid humor
- d) Gelatinous humor

126. The iris is behind the cornea?

- a) True
- b) False

127. What is the best definition of the retina?

- a) The innermost part of the eye that absorbs light and changes it into electrical signals
- b) An outermost part of the eye that sees things.
- c) The light switch to the brain.
- d) The clear, tough tissue covering the front of the eye.

128. What is the best definition of the Iris?

- a) The colored part of the eye under the cornea
- b) The white part of the eyeball
- c) The liquid inside the eyeball.
- d) The light absorbing part of the eye

129. The retina absorbs light and changes it into electrical signals?

- a) True
- b) False

130. The specialized cells that convert light into electric impulses is _____

- a) Photo receptors
- b) Ciliary cells
- c) Suspensory ligaments
- d) Optic nerve cells

131. For the colour vision cones in the retina are responsible

- a) True
- b) False

132. For the night vision or vision in the dim light, rods in the retina are responsible

- a) True b) False

133. Which is known as front window of the eye?

- a) Cornea b) Retina c) Iris d) Pupil

134. The lens present in the eye is a concave lens _____

- a) False b) True

135. The lens of the eye can change shape by contraction and elongation

- a) True b) False

136. Which part of the eye carries the impulses to Occipital lobe of brain

- a) Optic nerve b) Ciliary cells
c) Visual cortex d) Suspensory ligaments

137. Which may be the cause for blindness _____

- a) All of these b) Damage to the nerves within the eye
c) Damage to Optic nerve d) A stroke

138. The Bionic eye provokes visual sensations in the brain by directly stimulating different parts of

- a) Optic nerve b) Cornea c) Eye lid d) Eye lens

139. Age related loss of central vision and blurred peripheral vision is

- a) Macular degeneration b) Glaucoma
c) Retinopathy d) Cataract

140. The genetic eye disease, where loss of peripheral vision occurs

- a) Retinitis Pigmentosa b) Glaucoma
c) Retinopathy d) Macular degeneration

141. The two medical conditions of eye that bionic eye aims to address are

- a) Macular degeneration and Retinitis Pigmentosa
b) Retinitis Pigmentosa and Retinopathy
c) Glaucoma and Cataract
d) Macular degeneration and Retinopathy

142. The major limitation with present Bionic eye technology

- a) Expensive and doesn't enable users to perceive colors
- b) Batteries implanted within body
- c) Complicated surgical procedure
- d) High power requirement

143. Muscle fibres develop through the fusion of what type of cells?

- a) Mesodermal
- b) Endodermal
- c) Ectodermal
- d) Epithelial

144. In Isometric muscle contraction?

- a) No change in muscle length but tension changes
- b) Change in muscle length but tension constant
- c) Overcomes opposing resistance and muscle shortens
- d) Tension maintained but muscle lengthens.

145. What is elasticity of muscle?

- a) Ability of muscle to recoil to original resting length after stretched
- b) Muscle can be stretched to its normal resting length and beyond to a limited degree
- c) Capacity of muscle to respond to a stimulus
- d) Ability of a muscle to shorten with force

146. Capacity of muscle to respond to a stimulus is known as

- a) Excitability
- b) Elasticity
- c. Extensibility
- d. Contractility

147. This is the ability of the muscle to shorten with force.

- a) Contractility
- b) excitability
- c) Extensibility
- d) elasticity

148. Which of the following is false statement?

- a) The I band in a myofibril is an area of thin filaments
- b) Actin is a thin filament
- c) Myosin is a thick filament
- d) Functional unit of muscle is sarcomere

149. If the myosin filament touches both Z-lines, then the status of the muscle is said to be

- a) Fully Contracted
- b) Stretched
- c) Partially contracted
- d) Fully relaxed

150. When the muscle contracts, which will remains same

- a) A band
- b) I band
- c) H zone
- d) Sarcomere

151. Which one of the following is not a property of muscle?

- a) Rigidity
- b) elasticity
- c) Contractility
- d) Extensibility

152. Contraction and shortening of muscle at a constant and consistent rate of speed is

- a) Isokinetic
- b) Isometric
- c) Isotonic
- d) Eccentric

153. The type of muscle contraction which is not very common and requires a specialized equipment to produce one is

- a) Isokinetic
- b) Isometric
- c) Isotonic
- d) Concentric

154. Energy from the splitting of the fresh ATP allows repositioning of the _____

- a) myosin
- b) actin.
- c) troponin.
- d) tropomyosin

155. Cardiac muscle has

- a) striated, branched, uninucleated fibers
- b) nonstriated, spindle -shaped, uninucleated fibers
- c) striated, tubular, multinucleated fibers
- d) nonstriated, tubular, uninucleated fibers

156. Smooth muscles are

- a) nonstriated and involuntary
- b) striated and involuntary
- c) nonstriated and voluntary
- d) striated and voluntary

157. The calcium ions for muscle contraction are released from _____

- a) Sacroplasmic reticulum
- b) sacromere
- c) Ossicles
- d) Nebulin

158. Which of these is not a role of ATP in muscle contraction?

- a) Allows the troponin to move over , exposing the myosin binding sites on actin.
- b) Actively transports calcium ions into the sarcoplasmic reticulum.

- c) Energizes the power stroke of myosin cross- Bridge
- d) Disconnects the myosin cross bridge from the binding site on actin

159. Applications of sliding mechanism is adopted in

- a) All of these
- b) ship building
- c) Welding technology
- d) packing structure

160. Adleman put his theory of DNA computing to the test on a problem called the

- a) Traveling Salesman Problem (TSP)
- b) Tool salesman Problem (TSP)
- c) Ribo Computing Problem (RCP)
- d) Machine Executing Problem (MEP)

161. Dr. Adleman has written an article on solving HDP problem. Here HDP problem stands for

- a) Hamiltonian directed path problem
- b) Highly directed path problem
- c) Halwart directional path problem
- d) Holts directional path problem

162. Idea of DNA computing is

- a) Use of molecules for computation
- b) Genetic information dispatch
- c) Cell production
- d) Discovery of new polymers

163. Which is the limitation of DNA computing?

- a) Time consuming laboratory procedures
- b) Extremely dense information storage
- c) Enormous parallel computing possibilities
- d) Extraordinary energy efficiency

164. Disadvantage of DNA strands for computing is

- a) DNA is organic and decays. Experimentation thus must not be time consuming.
- b) The two strands are complimentary. Hence is unique.
- c) The four base pairs AGCT with triplet codes store enormous information.
- d) Complementary strands give low scope for error.

165. Why do planes have a wing of high aspect ratio?

- a) Provides great cruise efficiency
- b) Provides drag
- c) Reduces heat developed on engines
- d) Reduce fuel consumption

166. During generation of Bernoulli lift, the air moves _____ over the top of the wing compared to the bottom

- a) Faster
- b) slower
- c) In the opposite direction
- d) in the same speed

167. The high lift devices and control surfaces of airplane perform similar functions to which organ of birds?

- a) Wings
- b) legs
- c) neck
- d) bill

168. When dragon flies moves forward, what provides them the propulsion?

- a) Rear wings
- b) front wings
- c) tail
- d) legs

169. When the dragonfly moves forward, the front set of wings gives the dragonfly

- a) Lift
- b) propulsion
- c) pressure
- d) rotation

170. Absence of what causes the helicopter to rotate about it's own axis

- a) Tail rotor
- b) Rotor blades
- c) wing sections
- d) mechanical levers

171. The dragonfly wings and the helicopter blades are designed in such a way that

- a) Air flows faster through the upper region of the wings
- b) Air flows slower through the upper region of the wings
- c) Air flows faster through the lower region of the wings
- d) Air flows slower through the lower region of the wings

172. Dragonfly adjusts the angle of attack on it's wings by

- a) Transitioning it's muscle to beats it's wings slightly different pattern
- b) By rotating about its own axis
- c) Fluttering the wings whilst flight
- d) By changing it's mass

173. Blades of helicopter are made up of composite materials to prevent

- a) Cracking of blades under stress
- b) altering of angle of attack
- c) Lift and propulsion
- d) upward suction effect

174. The air flow below the rotor blades is slower resulting in high pressure so total effect is that the Helicopter is

- a) Pushed upwards b) Pushed downwards
- c) Pulled upwards d) Pulled downwards

175. The civilian submarines are used for Marine and freshwater research projects which is called as

- a) Oceanography b) Windography c) Hydrography d) Marinography

176. The first military submarine was _____ and _____ shaped

- a) Turtle and egg b) Tortle and apple
- c) Titanic and egg d) Turtle and apple

177. What changes can submarine do to float and sink in the water?

- a) Overall mass b) overall velocity
- c) Overall size d) overall speed

178. When water is pumped out of its flotation tanks overall mass of the submarine decreases. Since

- a) Volume remains the same, it's density decreases
- b) Volume remains the same, it's density increases
- c) Volume increases, it's density remains the same
- d) Volume decreases, it's density remains the same

179. Whales communication signals are bounced back off objects to determine

- a) All the given b) Size c) Distance d) Internal structure

180. Whales recognize each other by _____

- a) Whistles b) Eyes c) Size d) Smell

181. The major similarity between whale body and submarine is _____.

- a) Shape of body b) Accuracy c) Capacity d) Speed

182. Submarine can change their overall

- a) Mass b) volume c) height d) length

183. When a submarine takes in water, it

- a) Sinks
- b) floats
- c) gains speed
- d) gains thrust

184. The ultrasound of the Dolphin is affected by

- a) Warships
- b) Plastic accumulation in sea's
- c) Water pollution
- d) Excessive fishing in sea's

185. Clicks and whistles are two main types of vocalisation of _____

- a) Whales
- b) bats
- c) beetle
- d) pigeon

186. What is SONAR?

- a) Sound navigation and ranging
- b) solar navingation and responce
- c) Sound navigation and response
- d) solar navigation arrangement

187. Which among the following is widely used submarine applications

- a) SONAR
- b) RADAR
- c) LIDAR
- d) Electromagnetic waves

188. Which of the following is the property of a cardiac cell to initiate and fire an action potential on its own without external stimulation?

- a) Automaticity
- b) Spontaneity
- c) Selectivity
- d) Conductance

189. In heart block _____ may be blocked along the pathway through the heart?

- a) Electrical impulse
- b) Blood
- c) Air
- d) Water

190. The Heart's electrical conduction network found within the ventricular myocardium is termed as _____

- a) Purkinge fibres
- b) Sinoatrial node
- c) Arioventricular node
- d) Bundle of His

191. Which one is not a function of Autorythmic cells?

- a) Contract
- b) pacemaker activity
- c) Do not contract
- d) Initiate and conduct APs

192. The insulated wire that carries the stimulus from a pulse generator to the heart in an artificial pace-maker is called?

- a) Lead
- b) Pacer
- c) Generator
- d) Pulsar

193. Leads in an Artificial Pacemakers are wires threaded through _____ and attached to the heart muscles carrying impulses

- a) Veins b) Arteries c) Aorta d) Venacava

194. Cochlear implant captures sound and turns it into digital code with the help of:

- a) Sound processor b) Stimulator c) Transmitter d) Microphone

195. The thin membrane vibrates in response to sound waves that enters ear

- a) Ear drum b) pinna c) mallus d) incus

196. The cochlear technology is to help people who

- a) All of these
b) Who have moderate hearing loss in both of ears
c) Who has little or no benefit from hearing aid
d) Who has 50% or less or sentence recognition test score

197. What are ossicles?

- a) Small bones in the middle ear b) Fluid filled canals that extend into the cochlea
c) Fine hairs on the basics membrane d) Cells in olfactory bulbs

198. Which of the following is the correct sequence of ossicles present in the middle ear that conveys vibration from the eardrum to the inner ear

- a) Malleus, incus, stapes b) Stapes, incus, malleus
c) Malleus, stapes, incus d) Incus, stapes, malleus

199. This is worn behind the ear or on the body, captures sound and turns it into digital code

- a) Sound processor b) Battery c) Transmitting coil d) Electrode array

200. Choose the correct answer for which the benefits of a cochlear implant for hearing impaired person is not true

- a) Cannot focus better when in noisy environment b) Feel safer
c) Reconnect with missed sounds d) Hear well
