



# BIOCHEMISTRY TEST BANK



*Al razi node*

**Al-Razi Node Team**

**1. Which of the following best describes the difference between infection and inflammation?**

- a) Infection is the body's protective response, while inflammation refers to the invasion of bacteria or viruses.**
- b) Infection refers to the invasion of bacteria or viruses, while inflammation is the body's protective response.**
- c) Infection and inflammation are the same thing.**
- d) Infection requires microorganisms, while inflammation does not.**
- e) Inflammation requires microorganisms, while infection does not.**

**Answer: b) Infection refers to the invasion of bacteria or viruses, while inflammation is the body's protective response.**

**2. What is the function of lipids?**

- a) To provide energy to the body**
- b) To regulate body temperature**
- c) To cushion and protect organs**
- d) To aid in digestion**
- e) All of the above**

**Answer: e) All of the above**

**3. Which configuration of fatty acids gives a more stable structure?**

- a) Cis**
- b) Trans**
- c) Both cis and trans have the same stability**
- d) Neither cis nor trans have stability**
- e) None of the above**

**Answer: b) Trans**

**4. What is the predominant form of fatty acids with double bonds in the human body?**

- a) Cis**
- b) Trans**
- c) Both cis and trans are equally predominant**
- d) Neither cis nor trans are predominant**
- e) None of the above**

**Answer: a) Cis**

**5. Which factor affects the melting, boiling point, and physical properties of fatty acids?**

- a) The presence of double bonds**
- b) The absence of double bonds**
- c) The length of the fatty acid chain**
- d) The configuration of the fatty acid**
- e) All of the above**

**Answer: e) All of the above**

**6. Which of the following is an example of an inflammatory mediator?**

- a) Arachidonic Acid**
- b) Celebrex**
- c) Lipids**
- d) COX2**
- e) None of the above**

**Answer: a) Arachidonic Acid**

**7. Which type of drug targets COX2 to inhibit it?**

- a) Celebrex
- b) Arachidonic Acid
- c) Lipids
- d) COX1
- e) None of the above

**Answer: a) Celebrex**

**8. Why is Celebrex not prescribed very often?**

- a) It has no effect on COX2.
- b) It has no side effects.
- c) It has side effects on the cardiovascular system .
- d) It is not effective in treating inflammation.
- e) None of the above

**Answer: c) It has side effects on the cardiovascular system .**

**9. What is the role of lipids in the fluid mosaic model of membranes?**

- a) To provide energy for cell movement
- b) To regulate the composition of phospholipids
- c) To maintain the fluidity of membranes
- d) To act as inflammatory mediators
- e) None of the above

**Answer: c) To maintain the fluidity of membranes**

**10. Which type of fatty acid configuration exhibits kinks in its structure?**

- a) Cis
- b) Trans
- c) Both cis and trans exhibit kinks
- d) Neither cis nor trans exhibit kinks
- e) None of the above

**Answer: a) Cis**

**11. Which of the following is not a function of lipids?**

- a) Providing energy to the body
- b) Regulating body temperature
- c) Cushioning and protecting organs
- d) Aiding in digestion
- e) All of the above are functions of lipids

**Answer: e) All of the above are functions of lipids**

**12. What is the effect of cis configuration on the shape of a lipid molecule?**

- a) It straightens the molecule
- b) It bends the molecule
- c) It has no effect on the molecule's shape
- d) It makes the molecule unstable
- e) None of the above

**Answer: b) It bends the molecule**

**13. Which of the following is an example of an inflammatory response?**

- a) Invasion of bacteria**
- b) Invasion of viruses**
- c) Swelling and redness at the site of injury**
- d) Formation of vesicles**
- e) None of the above**

**Answer: c) Swelling and redness at the site of injury**

**14. What is the role of arachidonic acid in inflammation?**

- a) It acts as an inflammatory mediator**
- b) It inhibits COX2**
- c) It targets COX1**
- d) It has no role in inflammation**
- e) None of the above**

**Answer: a) It acts as an inflammatory mediator**

**15. Which of the following is not a function of lipids?**

- a) Providing insulation**
- b) Acting as a precursor for hormone synthesis**
- c) Facilitating cell signaling**
- d) Aiding in muscle contraction**
- e) All of the above are functions of lipids**

**Answer: d) Aiding in muscle contraction**

**16. Which type of drug targets COX1 to inhibit it?**

- a) Celebrex
- b) Arachidonic Acid
- c) Lipids
- d) COX2
- e) None of the above

**Answer: e) None of the above**

**17. Which type of fatty acid configuration is more commonly found in liquid form?**

- a) Cis
- b) Trans
- c) Both cis and trans are equally common in liquid form
- d) Neither cis nor trans are commonly found in liquid form
- e) None of the above

**Answer: a) Cis**

**18) Which of the following is a defining characteristic of lipids?**

- a) Water-soluble
- b) Protein-based
- c) Nonpolar groups dominance
- d) Carbohydrate-based
- e) Inorganic composition

**Answer: c**

**19) Lipids are classified as amphipathic molecules because they have:**

- a) One polar side and two nonpolar sides

- b) Two polar sides and one nonpolar side**
- c) Two polar sides and two nonpolar sides**
- d) One polar side and one nonpolar side**
- e) Three polar sides and one nonpolar side**

**Answer: d**

**20) Which of the following classes of lipids contains fats, oils, and waxes?**

- a) Simple lipids**
- b) Complex lipids**
- c) Derived lipids**
- d) Cyclic lipids**
- e) Saturated lipids**

**Answer: a**

**21) What is the main function of lipids in the body?**

- a) Transport oxygen in the blood**
- b) Store energy**
- c) Maintain body temperature**
- d) Provide structural support to cells**
- e) Promote immune responses**

**Answer: b**

**22) Triacylglycerols are composed of:**

- a) Three fatty acids linked to a glycerol molecule**



- b) Three glycerol molecules linked to a fatty acid**
- c) Three phospholipids linked to a cholesterol molecule**
- d) Three fatty acids linked to a cholesterol molecule**
- e) Three glycerol molecules linked to a cholesterol molecule**

**Answer: a**

**23) How do double bonds affect the melting point of fatty acids?**

- a) Double bonds increase the melting point**
- b) Double bonds have no effect on the melting point**
- c) Double bonds decrease the melting point**
- d) Double bonds cause fatty acids to solidify at room temperature**
- e) Double bonds convert unsaturated fatty acids to saturated fatty acids**

**Answer: c**

**24) Prostaglandins are derived from which essential fatty acid?**

- a) Arachidonic acid**
- b) Linoleic acid**
- c) Oleic acid**
- d) Palmitic acid**
- e) Stearic acid**

**Answer: a**

**25) Which type of eicosanoids are responsible for constriction of smooth muscles, especially in blood vessels?**

- a) Prostaglandins**
- b) Prostacyclins**

- c) **Leukotrienes**
- d) **Thromboxanes**
- e) **Celebrex**

**Answer: d**

**26) How do lipids act as a major storage site of energy?**

- a) **Lipids are converted into carbohydrates for energy storage.**
- b) **Lipids attract water molecules, allowing them to store energy more efficiently.**
- c) **Lipids are more stable and can store more energy per gram compared to carbohydrates.**
- d) **Lipids can be used as a source of energy only during fasting or starvation.**
- e) **Lipids are broken down into fatty acids, which are then used for energy production.**

**Answer: c**

**27) Why are lipids preferred over carbohydrates for long-term energy storage?**

- a) **Lipids are easier to break down into energy than carbohydrates.**
- b) **Carbohydrates are not suitable for energy storage.**
- c) **Lipids do not attract water molecules, making them more efficient for storage.**
- d) **Lipids can be converted into proteins for energy storage.**
- e) **Carbohydrates are rapidly consumed as the primary source of energy in the body.**

**Answer: c**

**28) What is the primary function of thromboxanes in the body?**

- a) **Induction of vasodilation**
- b) **induction of platelet aggregation**
- c) **Control of cellular function in response to injury**

- d) Induction of inflammation**
- e) Relaxation of smooth muscles**

**Answer: b**

**29) What is the effect of double bonds on the structure of unsaturated fatty acids?**

- a) Double bonds create kinks in the molecule, increasing thickness.**
- b) Double bonds straighten the molecule, reducing thickness.**
- c) Double bonds cause the molecule to rotate, resulting in a stable structure.**
- d) Double bonds compact the molecule, reducing non-covalent interactions.**
- e) Double bonds increase the polarity of the molecule, making it water-soluble.**

**Answer: a**

**30) What is the main function of prostacyclins in the body?**

- a) Inhibition of platelet aggregation**
- b) Induction of vasodilation**
- c) Control of cellular function in response to injury**
- d) Induction of inflammation**
- e) a+b**

**Answer: e**

**31) What is the systematic name for a fatty acid with 18 carbons and one double bond between carbon 9 and carbon 10?**

- a) Octadecanoic acid**
- b) Octadecenoic acid**

- c) **Decanoic acid**
- d) **Decenoic acid**
- e) **Octadecatrienoic acid**

**Answer: b**

**32) Which class of lipids includes molecules with cyclic ether (ROR) in their structures?**

- a) **Prostaglandins**
- b) **Prostacyclins**
- c) **Thromboxanes**
- d) **Leukotrienes**
- e) **Fatty acids**

**Answer: b+c**

**33) Which type of eicosanoids are responsible for the induction of vasodilation and the inhibition of platelet aggregation?**

- a) **Prostaglandins**
- b) **Prostacyclins**
- c) **Leukotrienes**
- d) **Thromboxanes**
- e) **Celebrex**

**Answer: b**

**34) Celebrex specifically targets which type of cyclooxygenase (COX)?**

- a) **COX-1**
- b) **COX-2**
- c) **COX-3**

- d) COX-4
- e) COX-5

**Answer: b**

**35) Which type of fatty acids has the highest melting point?**

- a) Saturated fatty acids
- b) Unsaturated fatty acids with one double bond
- c) Unsaturated fatty acids with two double bonds
- d) Trans fatty acids
- e) Cis fatty acids

**Answer: a**

**36) Why are medium-chain fatty acids more water-soluble compared to long-chain fatty acids?**

- a) Medium-chain fatty acids have more double bonds.
- b) Medium-chain fatty acids have fewer carbons.
- c) Medium-chain fatty acids have a kinked structure.
- d) Medium-chain fatty acids are found in adipocytes.
- e) Medium-chain fatty acids are derivatives of eicosanoids.

**Answer: b**

**37. Which of the following is NOT a characteristic of inflammation?**

- a) Redness
- b) Swelling
- c) Pain
- d) Fever
- e) Increased heart rate

**Answer: e) Increased heart rate**

**38. Which model explains the fluidity of cell membranes?**

- a) Fluid mosaic model
- b) Lock and key model
- c) Induced fit model
- d) Signal transduction model
- e) Endosymbiotic theory

**Answer: a) Fluid mosaic model**

**39. Which of the following is NOT a function of lipids?**

- a) Energy storage
- b) Insulation
- c) Protection of organs
- d) Cell signaling
- e) Enzyme production

**Answer: e) Enzyme production**

**40) Which of the following is an omega-3 fatty acid?**

- a) Linoleic acid
- b) Oleic acid
- c) Eicosapentaenoic acid (EPA)
- d) Arachidonic acid
- e) Palmitic acid

**Answer: c) Eicosapentaenoic acid (EPA)**

**41) Omega-6 fatty acids are known to:**

- a) Reduce inflammation**
- b) Induce inflammation**
- c) Regulate gastric secretion**
- d) Reduce cholesterol in the circulation**
- e) Promote the synthesis of anti-inflammatory molecules**

**Answer: b) Increase inflammation**

**42) Linoleic acid is important because:**

- a) It reduces synthesis of eicosanoids**
- b) It increases the synthesis of anti-inflammatory molecules**
- c) It serves as a precursor of arachidonic acid**
- d) It acts as a barrier on the skin**
- e) It reduces cholesterol in the circulation**

**Answer: c) It serves as a precursor of arachidonic acid**

**43) Triglycerides consist of:**

- a) Three fatty acids attached to glycerol by ester linkage**
- b) Three fatty acids attached to glucose by ester linkage**
- c) Three fatty acids attached to amino acids by ester linkage**
- d) Three fatty acids attached to phospholipids by ester linkage**
- e) Three fatty acids attached to cholesterol by ester linkage**

**Answer: a) Three fatty acids attached to glycerol by ester linkage**

**44) Saponification is a process that:**

- a) Converts unsaturated fats into saturated fats**

- b) Converts saturated fats into unsaturated fats**
- c) Converts fats into soaps**
- d) Converts soaps into fats**
- e) Converts fats into triglycerides**

**Answer: c) Converts fats into soaps**

**45) How does soap work?**

- a) It forms micelles that trap grease and dirt**
- b) It forms emulsions that dissolve grease and dirt**
- c) It breaks down grease and dirt into smaller molecules**
- d) It reacts with grease and dirt to form salts**
- e) It forms hydrogen bonds with grease and dirt**

**Answer: a) It forms micelles that trap grease and dirt**

**46) Hydrogenation is a process that:**

- a) Converts unsaturated fatty acids into saturated fatty acids**
- b) Converts saturated fatty acids into unsaturated fatty acids**
- c) Converts fats into soaps**
- d) Converts soaps into fats**
- e) Converts fats into triglycerides**

**Answer: a) Converts unsaturated fatty acids into saturated fatty acids**

**47) Trans fats are associated with:**

- a) Reduced risk of coronary heart disease**
- b) Increased risk of coronary heart disease**
- c) Reduced risk of inflammation**



- d) Increased risk of inflammation**
- e) Reduced risk of obesity**

**Answer: b) Increased risk of coronary heart disease**

**48) Waxes are:**

- a) Soluble in water**
- b) Easily hydrolyzed by lipases**
- c) Highly resistant to rancidity**
- d) Highly nutritious**
- e) Made of glycerol and fatty acids**

**Answer: c) Highly resistant to rancidity**

**49) Which of the following is the most prevalent class of lipids in membranes?**

- a) Triglycerides**
- b) Waxes**
- c) Glycolipids**
- d) Phospholipids**
- e) Steroids**

**Answer: d) Phospholipids**

**50) Membrane lipids mostly contains:**

- a) A glycerol and phosphate backbone**
- b) A sphingosine backbone**
- c) A monohydric alcohol backbone**
- d) A cholesterol backbone**

**e) A fatty acid backbone**

**Answer: a) A glycerol and phosphate backbone**

**51) Snake venom contains lecithinase, which hydrolyzes:**

- a) Polyunsaturated fatty acids**
- b) Monounsaturated fatty acids**
- c) Saturated fatty acids**
- d) Phospholipids**
- e) Triglycerides**

**Answer: a) polyunsaturated fatty acids**

**52) Emulsification is the process of:**

- a) Breaking down fats into smaller molecules**
- b) Forming micelles to trap nonpolar molecules**
- c) Converting unsaturated fats into saturated fats**
- d) Converting saturated fats into unsaturated fats**
- e) Mixing fats into nonpolar substances**

**Answer: b) forming micelles to trap non polar molecules**

**53) Which of the following is a characteristic of phosphatidylinositol?**

- a) Sends messages across cell membranes**
- b) Prevents water loss by leaves of plants**
- c) Coats the feathers of ducks**
- d) Gives a shiny appearance to imported apples**
- e) Acts as a precursor of arachidonic acid**

**Answer: a) Sends messages across cell membranes**

**54) Which of the following is a characteristic of trans fats?**

- a) They don't have kinks in their structure
- b) They are associated with reduced risk of coronary heart disease
- c) They are found in high amounts in plant fats
- d) They are easily hydrolyzed by lipases
- e) They are formed by partial hydrogenation of unsaturated oils

**Answer: e) They are formed by partial hydrogenation of unsaturated oils**

**55) Which of the following is an example of a saturated fatty acid?**

- a) Linoleic acid
- b) Oleic acid
- c) Eicosapentaenoic acid (EPA)
- d) Arachidonic acid
- e) Palmitic acid

**Answer: e) Palmitic acid**

**56) Which of the following is an example of a monounsaturated fatty acid?**

- a) Linoleic acid
- b) Oleic acid
- c) Eicosapentaenoic acid (EPA)
- d) Arachidonic acid
- e) Palmitic acid

**Answer: b) Oleic acid**

**57) Which of the following is an example of an omega-9 fatty acid?**

- a) Linoleic acid**
- b) Oleic acid**
- c) Eicosapentaenoic acid (EPA)**
- d) Arachidonic acid**
- e) Palmitic acid**

**Answer: b) Oleic acid**

**58.. How do glycerol phospholipids form the structure of the cell membrane?**

- a) By forming a single layer of phospholipids**
- b) By forming a triple layer of phospholipids**
- c) By forming a bilayer of phospholipids**
- d) By forming a network of phospholipids**
- e) By forming a spiral structure of phospholipids**

**Answer: c) By forming a bilayer of phospholipids**

**59. What is the main function of liposomes?**

- a) To provide structural support to the cell membrane**
- b) To transport oxygen to the cells**
- c) To deliver drugs to specific targets**
- d) To produce energy for the cell**
- e) To regulate cell division**

**Answer: c) To deliver drugs to specific targets**

**60. Which type of sphingolipid acts as an electrical insulator in nerve fibers?**

- a) Sphingomyelin**
- b) Glycosphingolipid**
- c) Phosphocholine**
- d) Fatty acid**
- e) Cholesterol**

**Answer: a) Sphingomyelin**

**61. What is the role of low-density lipoproteins (LDL) in the body?**

- a) They carry cholesterol from the liver to peripheral tissues**
- b) They remove excess cholesterol from the body**
- c) They act as cell surface receptors**
- d) They transport oxygen to the cells**
- e) They regulate cell division**

**Answer: a) They carry cholesterol from the liver to peripheral tissues**

**62. How are integral membrane proteins associated with the cell membrane?**

- a) Through non-covalent interactions with peripheral membrane proteins**
- b) Through covalent bonds with lipid anchors**
- c) Through hydrogen bonds with phospholipids**
- d) Through electrostatic interactions with cholesterol**
- e) Through hydrophobic regions that anchor into the membrane**

**Answer: e) Through hydrophobic regions that anchor into the membrane**

**63. What is the function of sphingomyelin in the myelin sheath?**

- a) It acts as an electrical insulator**
- b) It transports nutrients to nerve fibers**
- c) It regulates cell recognition**
- d) It facilitates lipid absorption**
- e) It promotes cell division**

**Answer: a) It acts as an electrical insulator**

**64. What are the Nodes of Ranvier?**

- a) Regions where myelin sheath is absent**
- b) Regions where sphingomyelin is synthesized**
- c) Regions where lipid absorption occurs**
- d) Regions where cell recognition takes place**
- e) Regions where cell division occurs**

**Answer: a) Regions where myelin sheath is absent**

**65. How does a defect in sphingomyelin structure lead to a disease?**

- a) It disrupts lipid absorption**
- b) It impairs cell recognition**
- c) It affects cell division**
- d) It delays the transmission of action potentials**
- e) It inhibits electrical insulation**

**Answer: d) It delays the transmission of action potentials**

**66. How do liposomes encapsulate and protect drugs during delivery?**

- a) By acting as electrical insulators**
- b) By facilitating lipid absorption**
- c) By forming a stable lipid bilayer membrane around the drug**
- d) By mediating cell recognition**
- e) By promoting cell division**

**Answer: c+d**

**67. What are the functions of glycosphingolipids in the cell membrane?**

- a) To act as electrical insulators**
- b) To facilitate lipid absorption**
- c) To regulate cell recognition**
- d) To stabilize the membrane structure**
- e) To enhance cell division**

**Answer: c) To regulate cell recognition**

**68. Which type of glycerophospholipid is found in the inner membrane of mitochondria?**

- a) Diphosphatidyl-glycerol**
- b) Cardiolipins**
- c) Plasmalogens**
- d) Phosphatidyl inositol**
- e) Sphingolipids**

**Answer: b) Cardiolipins**

**69. How many molecules of glycerol are present in the structure of cardiolipins?**

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

**Answer: c) 3**

**70. Which type of glycerophospholipid is found in brain tissues and acts as a second messenger during signal transduction?**

- a) Diphosphatidyl-glycerol
- b) Cardiolipins
- c) Plasmalogens
- d) Phosphatidyl inositol
- e) Sphingolipids

**Answer: d) Phosphatidyl inositol**

**71. Which type of glycerophospholipid has a protective role against reactive oxygen species?**

- a) Diphosphatidyl-glycerol
- b) Cardiolipins
- c) Plasmalogens
- d) Phosphatidyl inositol
- e) Sphingolipids



**Answer: c) Plasmalogens**

**72. Which type of sphingolipids is the major component of the coating around nerve fibers?**

- a) Sphingomyelin**
- b) Glycosphingolipid**
- c) Ceramide**
- d) Sulfatides**
- e) Gangliosides**

**Answer: a) Sphingomyelin**

**73. What is the core structure of sphingolipids?**

- a) Glycerol**
- b) Fatty acids**
- c) Sphingosine**
- d) Phosphate groups**
- e) Nitrogenous base**

**Answer: c) Sphingosine**

**74. Which type of glycolipid contains a single hexose?**

- a) Cerebrosides**
- b) Globosides**
- c) Gangliosides**
- d) Sulfatides**
- e) Phospholipids**

**Answer: a) Cerebrosides**

**75. Which lipoprotein is responsible for transporting dietary lipids from the intestines to the liver?**

- a) Chylomicrons**
- b) VLDL**
- c) IDL**
- d) LDL**
- e) HDL**

**Answer: a) Chylomicrons**

**76. Which lipoprotein reaches other tissues with cholesterol?**

- a) Chylomicrons**
- b) VLDL**
- c) IDL**
- d) LDL**
- e) HDL**

**Answer: d) LDL**

**77. What is the precursor molecule for the synthesis of steroids?**

- a) Glycerol**
- b) Fatty acids**
- c) Sphingosine**
- d) Cholesterol**
- e) Isoprene**

**Answer: e) Isoprene**

**78. Which phospholipids are mainly found on the outer surface of cell membranes?**

- a) Phosphatidylcholine, sphingomyelin, and glycolipids**
- b) Phosphatidylethanolamine, phosphatidylserine, and phosphatidylinositol**
- c) Phosphatidyl inositol**
- d) Diphosphatidyl-glycerol**
- e) Cardiolipins**

**Answer: a) Phosphatidylcholine, sphingomyelin, and glycolipids**

**79. What is the distribution of cholesterol in cell membranes?**

- a) Mainly on the outer surface**
- b) Mainly on the inner surface**
- c) Equally distributed on both surfaces**
- d) Only present in prokaryotic cells**
- e) Absent in plant cells**

**Answer: c) Equally distributed on both surfaces**

**80. What is the main function of lipoproteins?**

- a) Cell recognition**
- b) Signal transduction**
- c) Transport of lipids in blood plasma**
- d) Protection against reactive oxygen species**
- e) Formation of the cell membrane structure**

**Answer: c) Transport of lipids in blood plasma**

**81. Which sphingolipid serves as the antigenic determinants of the ABO blood groups?**

- a) Sphingomyelin**
- b) Globosides**
- c) Ceramide**
- d) Sulfatides**
- e) Gangliosides**

**Answer: b) Globosides**

تجري الرياح كما تجري سفينتنا .. نحن الرياح و نحن البحر و السفنُ  
إن الذي يرتجي شيئاً بهمتِهِ .. يلقاهُ لو حاربتهُ الانسُ والجنُ ..  
فاقصدُ الى قمم الاشياءِ تدركها .. تجري الرياح كما رادت لها السفن