Carbohydrates:

1. What is another name for a carbohydrate?
   - a) Protein
   - b) Lipid
   - c) Saccharide
   - d) Nucleic acid

   Answer: c) Saccharide

2. Which of the following is NOT a function of carbohydrates?
   - a) Source of energy
   - b) Structure
   - c) Building blocks
   - d) Hormone regulation

   Answer: d) Hormone regulation

3. What is the functional group of sugars

that gives them their chemical properties?

- a) Hydroxyl group
- b) Carboxyl group
- c) Amino group
- d) Carbonyl group

Answer: d) Carbonyl group

4. Which of the following is a polysaccharide?

- a) Glucose
- b) Sucrose
- c) Cellulose
- d) Fructose

Answer: c) Cellulose

5. What are glycoproteins and proteoglycans examples of?

- a) Simple sugars
- b) Polysaccharides

- c) Glycolipids
- d) Nucleic acids

Answer: b) Polysaccharides

6. What is the anomeric carbon in cyclic aldohexoses used to determine?
- a) The type of sugar
- b) The structure of the ring
- c) α or β types
- d) The length of the chain

Answer: c) α or β types

7. Which process converts a sugar into a sugar acid?
- a) Oxidation
- b) Reduction
- c) Esterification
- d) Ammonification

Answer: a) Oxidation

8. What is formed by the reduction of a sugar?
- a) Sugar acids
- b) Sugar esters
- c) Sugar alcohols
- d) Deoxy sugars

Answer: c) Sugar alcohols

9. Which of the following is a reduced sugar with one or more hydroxyl groups replaced by hydrogens?
- a) Glucose
- b) Ribose
- c) Deoxyribose
- d) Fructose

Answer: c) Deoxyribose

10. What is the product of esterification in sugars?
    - a) Alcohols
    - b) Acids
    - c) Esters
    - d) Amines

    Answer: c) Esters

11. What health benefits does lactulose have?
    - a) Treating constipation
    - b) Increasing cholesterol
    - c) Promoting muscle growth
    - d) Enhancing vision

    Answer: a) Treating constipation

12. What is lactose intolerance caused by?
    - a) Deficiency of lactase enzyme
    - b) Excess of lactose enzyme

- c) Deficiency of glucose
- d) Excess of sucralose

Answer: a) Deficiency of lactase enzyme

13. Which enzyme is missing in galactosemia?
- a) Lactase
- b) Galactose-metabolizing enzymes
- c) Sucralase
- d) Glycogen synthase

Answer: b) Galactose-metabolizing enzymes

14. Where is glycogen primarily stored in the body?
- a) Liver
- b) Kidneys
- c) Brain
- d) Pancreas

Answer: a) Liver

15. What makes glycogen more water-soluble and prevents crystallization?
- a) Longer chains
- b) More branching
- c) Fewer branches
- d) Shorter chains

Answer: b) More branching

16. What is the basic chemical formula for monosaccharides?
- a) $(CH_2)nO$
- b) $(CH_2O)n$
- c) $(C_2H_2O)n$
- d) $(CHO_2)n$

Answer: b) $(CH_2O)n$

17. What type of sugar is glucose known as?
   - a) Fruit sugar
   - b) Blood sugar
   - c) Milk sugar
   - d) Table sugar

   Answer: b) Blood sugar

18. Which sugar is the sweetest?
   - a) Glucose
   - b) Galactose
   - c) Fructose
   - d) Maltose

   Answer: c) Fructose

19. What determines if a sugar is classified as a reducing sugar?
   - a) Presence of an aldehyde group
   - b) Presence of a ketone group

- c) Ability to reduce other substances
- d) Number of carbon atoms

Answer: c) Ability to reduce other substances

20. What kind of bond links monosaccharides in polysaccharides?
- a) Hydrogen bond
- b) Ionic bond
- c) Glycosidic bond
- d) Peptide bond

Answer: c) Glycosidic bond

21. Which polysaccharide is a major component of plant cell walls?
- a) Starch
- b) Cellulose
- c) Glycogen
- d) Chitin

Answer: b) Cellulose

22. What type of sugar is ribose?
- a) Aldohexose
- b) Aldopentose
- c) Ketopentose
- d) Ketohexose

Answer: b) Aldopentose

23. What is the significance of chiral carbons in sugars?
- a) They determine the sweetness
- b) They allow for the formation of isomers
- c) They make the sugar soluble in water
- d) They determine the sugar's acidity

Answer: b) They allow for the formation of isomers

24. Which molecule is a component of DNA and a deoxy sugar?
   - a) Glucose
   - b) Ribose
   - c) Deoxyribose
   - d) Fructose

   Answer: c) Deoxyribose

25. What type of reaction is involved in forming glycosidic bonds?
   - a) Hydrolysis
   - b) Condensation
   - c) Oxidation
   - d) Reduction

   Answer: b) Condensation

26. Which polysaccharide is highly branched and used for energy storage in

animals?
- a) Starch
- b) Cellulose
- c) Glycogen
- d) Chitin

Answer: c) Glycogen

27. What type of sugar is formed when glucose and galactose combine?
- a) Sucrose
- b) Maltose
- c) Lactose
- d) Fructose

Answer: c) Lactose

28. What is the precursor of chitin?
- a) Glucose
- b) Galactose
- c) Pyranose

- d) Modified sugar

Answer: d) Modified sugar

29. What is a common function of glycosaminoglycans (GAGs)?
- a) Energy storage
- b) Structural support
- c) Immune response modulation
- d) Enzyme activation

Answer: b) Structural support

30. Which sugar is involved in determining blood types?
- a) Glucose
- b) Fructose
- c) Galactose
- d) Sialic acid

Answer: d) Sialic acid

31. What is the storage form of glucose in plants?
   - a) Cellulose
   - b) Glycogen
   - c) Starch
   - d) Chitin

   Answer: c) Starch

32. Which sugar is primarily found in milk and dairy products?
   - a) Glucose
   - b) Lactose
   - c) Sucrose
   - d) Fructose

   Answer: b) Lactose

33. What type of sugar is found in nucleotides of RNA?

- a) Glucose
- b) Deoxyribose
- c) Ribose
- d) Fructose

Answer: c) Ribose

34. What is the most common form of stored energy in animals?
- a) Cellulose
- b) Starch
- c) Glycogen
- d) Chitin

Answer: c) Glycogen

35. What is a characteristic of reducing sugars?
- a) They have no free anomeric carbon
- b) They have a free anomeric carbon
- c) They do not participate in oxidation

reactions
   - d) They are always disaccharides

   Answer: b) They have a free anomeric carbon

36. What is an example of a sugar alcohol?
   - a) Sorbitol
   - b) Glucose
   - c) Lactose
   - d) Ribose

   Answer: a) Sorbitol

37. Which sugar is often used as an artificial sweetener?
   - a) Glucose
   - b) Sucrose
   - c) Sucralose
   - d) Fructose

Answer: c) Sucralose

38. What is the role of glycolipids in cells?
- a) Energy storage
- b) Structural component
- c) Cell recognition
- d) Enzyme activity

Answer: c) Cell recognition

39. What kind of bond connects the glucose units in cellulose?
- a) α-1,4-glycosidic bonds
- b) β-1,4-glycosidic bonds
- c) α-1,6-glycosidic bonds
- d) β-1,6-glycosidic bonds

Answer: b) β-1,4-glycosidic bonds

40. What type of polysaccharide is chitin?
- a) Homopolysaccharide

- b) Heteropolysaccharide
- c) Glycoprotein
- d) Glycolipid

Answer: a) Homopolysaccharide

41. What is the effect of branching on polysaccharides like glycogen?
- a) Decreases solubility
- b) Increases crystallization
- c) Increases water solubility
- d) Reduces digestibility

Answer: c) Increases water solubility

42. What does an α-glycosidic bond in sugars indicate?
- a) The OH group is above the plane of the ring
- b) The OH group is below the plane of the ring

- c) The sugar is an aldehyde
- d) The sugar is a ketone

Answer: b) The OH group is below the plane of the ring

43. Which sugar is directly involved in cellular respiration?
- a) Sucrose
- b) Glucose
- c) Galactose
- d) Fructose

Answer: b) Glucose

44. What is a disaccharide composed of two glucose molecules called?
- a) Sucrose
- b) Lactose
- c) Maltose
- d) Fructose

Answer: c) Maltose

45. What is a distinguishing feature of ketoses compared to aldoses?
- a) Presence of an aldehyde group
- b) Presence of a ketone group
- c) Number of carbon atoms
- d) Solubility in water

Answer: b) Presence of a ketone group

46. Which sugar is an epimer of glucose at carbon 4?
- a) Fructose
- b) Galactose
- c) Mannose
- d) Ribose

Answer: b) Galactose

47. What is the configuration of the OH group on the anomeric carbon in β-glucose?

- a) Above the plane of the ring
- b) Below the plane of the ring
- c) On the left side
- d) On the right side

Answer: a) Above the plane of the ring

48. What is the main storage form of carbohydrates in plants?

- a) Glycogen
- b) Cellulose
- c) Starch
- d) Chitin

Answer: c) Starch

49. What is the difference between α and β anomers of glucose?

- a) Position of the OH group at carbon 1
- b) Position of the OH group at carbon 2
- c) Number of carbon atoms
- d) Type of glycosidic bond

Answer: a) Position of the OH group at carbon 1

50. Which carbohydrate is found in insect exoskeletons?
- a) Cellulose
- b) Starch
- c) Chitin
- d)

Glycogen

Answer: c) Chitin

51. What type of sugar is mannose?
- a) Aldose

- b) Ketose
- c) Deoxy sugar
- d) Sugar alcohol

Answer: a) Aldose

52. Which sugar is most commonly found in RNA?
- a) Glucose
- b) Deoxyribose
- c) Ribose
- d) Fructose

Answer: c) Ribose

53. Which sugar is commonly used in the food industry as a sweetener and preservative?
- a) Glucose
- b) Sorbitol
- c) Lactose

- d) Maltose

Answer: b) Sorbitol

54. What is the primary function of cellulose in plants?
- a) Energy storage
- b) Structural support
- c) Metabolic regulation
- d) Signal transduction

Answer: b) Structural support

55. Which disaccharide is composed of glucose and fructose?
- a) Sucrose
- b) Lactose
- c) Maltose
- d) Cellobiose

Answer: a) Sucrose

56. What is the common name for β-D-fructofuranosyl α-D-glucopyranoside?
- a) Lactose
- b) Sucrose
- c) Maltose
- d) Cellobiose

Answer: b) Sucrose

57. What kind of bond connects the two glucose molecules in maltose?
- a) β-1,4-glycosidic bond
- b) α-1,4-glycosidic bond
- c) β-1,6-glycosidic bond
- d) α-1,6-glycosidic bond

Answer: b) α-1,4-glycosidic bond

58. Which sugar is known as fruit sugar?
- a) Glucose

- b) Galactose
- c) Fructose
- d) Ribose

Answer: c) Fructose

59. What type of sugar is a component of glycoproteins and glycolipids on cell surfaces?
- a) Mannose
- b) Glucose
- c) Sialic acid
- d) Lactose

Answer: c) Sialic acid

60. Which sugar is an example of a pentose?
- a) Glucose
- b) Galactose
- c) Ribose

- d) Fructose

Answer: c) Ribose

61. What type of reaction occurs when two monosaccharides join to form a disaccharide?
- a) Hydrolysis
- b) Dehydration synthesis
- c) Oxidation
- d) Reduction

Answer: b) Dehydration synthesis

62. Which of the following is NOT a characteristic of polysaccharides?
- a) They are polymers of monosaccharides
- b) They can be branched or unbranched
- c) They are water-soluble
- d) They serve as energy storage or

structural components

Answer: c) They are water-soluble

63. What is the difference between starch and glycogen?
- a) Type of monosaccharides
- b) Degree of branching
- c) Type of glycosidic bond
- d) Function in the body

Answer: b) Degree of branching

64. Which sugar can be fermented by intestinal bacteria, leading to gas formation?
- a) Glucose
- b) Raffinose
- c) Sucrose
- d) Maltose

Answer: b) Raffinose

65. What is the primary structural component of fungal cell walls?
- a) Cellulose
- b) Glycogen
- c) Chitin
- d) Starch

Answer: c) Chitin

66. What type of sugar is found in high levels in honey?
- a) Glucose
- b) Fructose
- c) Sucrose
- d) Lactose

Answer: b) Fructose

67. Which polysaccharide is composed of

glucose units linked by β-1,4-glycosidic bonds?

- a) Cellulose
- b) Starch
- c) Glycogen
- d) Chitin

Answer: a) Cellulose

68. What is the precursor molecule for the synthesis of lactose?

- a) Glucose
- b) Galactose
- c) Mannose
- d) Fructose

Answer: a) Glucose

69. Which carbohydrate serves as an energy reserve in plants?

- a) Cellulose

- b) Starch
- c) Glycogen
- d) Chitin

Answer: b) Starch

70. What type of bond is formed between the anomeric carbon of one sugar and the hydroxyl group of another sugar?
- a) Hydrogen bond
- b) Ionic bond
- c) Glycosidic bond
- d) Peptide bond

Answer: c) Glycosidic bond

71. What is the primary source of energy in human blood?
- a) Fructose
- b) Lactose
- c) Glucose

- d) Sucrose

Answer: c) Glucose

72. Which sugar is reduced to form sorbitol?
- a) Glucose
- b) Ribose
- c) Mannose
- d) Fructose

Answer: a) Glucose

73. What is the main storage polysaccharide in fungi?
- a) Glycogen
- b) Starch
- c) Cellulose
- d) Chitin

Answer: a) Glycogen

74. What type of sugar is a component of the bacterial cell wall?
- a) Glucose
- b) Mannose
- c) Peptidoglycan
- d) Sucrose

Answer: c) Peptidoglycan

75. Which sugar is an isomer of glucose?
- a) Fructose
- b) Ribose
- c) Lactose
- d) Mannose

Answer: d) Mannose

76. What is the role of glycosaminoglycans in connective tissue?
- a) Energy storage

- b) Structural support
- c) Hormone regulation
- d) Metabolism

Answer: b) Structural support

77. What type of glycosidic bond is found in lactose?
- a) β-1,4-glycosidic bond
- b) α-1,4-glycosidic bond
- c) β-1,6-glycosidic bond
- d) α-1,6-glycosidic bond

Answer: a) β-1,4-glycosidic bond

78. Which sugar is a key component of the exoskeleton of insects and crustaceans?
- a) Cellulose
- b) Glycogen
- c) Chitin
- d) Starch

Answer: c) Chitin

79. What is the main carbohydrate found in the liver and muscle tissues?
- a) Glucose
- b) Glycogen
- c) Fructose
- d) Lactose

Answer: b) Glycogen

80. Which sugar is often referred to as milk sugar?
- a) Sucrose
- b) Lactose
- c) Glucose
- d) Maltose

Answer: b) Lactose

81. What type of bond is formed between the anomeric carbon of glucose and the hydroxyl group of another glucose in maltose?

- a) β-1,4-glycosidic bond
- b) α-1,4-glycosidic bond
- c) β-1,6-glycosidic bond
- d) α-1,6-glycosidic bond

Answer: b) α-1,4-glycosidic bond

82. Which sugar is known to be the sweetest naturally occurring carbohydrate?

- a) Glucose
- b) Fructose
- c) Galactose
- d) Ribose

Answer: b) Fructose

83. What is the primary structural

carbohydrate in plants?
- a) Cellulose
- b) Starch
- c) Glycogen
- d) Chitin

Answer: a) Cellulose

84. Which sugar is involved in the formation of blood type antigens?
- a) Glucose
- b) Fructose
- c) Galactose
- d) Sialic acid

Answer: d) Sialic acid

85. Which type of sugar can be oxidized to form a sugar acid?
- a) Glucose
- b) Ribose

- c) Fructose

- d) Galactose

Answer: a) Glucose

86. What is the result of the oxidation of glucose?
- a) Gluconic acid
- b) Sorbitol
- c) Fructose
- d) Ribose

Answer: a) Gluconic acid

87. What is the name of the bond that links the monosaccharides in a polysaccharide?
- a) Hydrogen bond
- b) Ionic bond
- c) Glycosidic bond

- d) Peptide bond

Answer: c) Glycosidic bond

88. What type of sugar is mannose?
- a) Aldose
- b) Ketose
- c) Deoxy sugar
- d) Sugar alcohol

Answer: a) Aldose

89. What is the storage form of glucose in animals?
- a) Cellulose
- b) Starch
- c) Glycogen
- d) Chitin

Answer: c) Glycogen

90. Which sugar is a major component of RNA?
- a) Glucose
- b) Deoxyribose
- c) Ribose
- d) Fructose

Answer: c) Ribose

91. Which polysaccharide is known for its ability to form gels?
- a) Cellulose
- b) Glycogen
- c) Starch
- d) Pectin

Answer: d) Pectin

92. What is the main carbohydrate in the exoskeleton of insects?
- a) Glycogen

- b) Cellulose
- c) Starch
- d) Chitin

Answer: d) Chitin

93. What is the primary function of glycosaminoglycans in the human body?
- a) Energy storage
- b) Structural support
- c) Hormone production
- d) Metabolic regulation

Answer: b) Structural support

94. Which sugar is commonly used as an artificial sweetener?
- a) Glucose
- b) Sucrose
- c) Sucralose
- d) Fructose

Answer: c) Sucralose

95. What is the role of glycolipids in cells?
- a) Energy storage
- b) Structural component
- c) Cell recognition
- d) Enzyme activity

Answer: c) Cell recognition

96. Which polysaccharide is used by plants for energy storage?
- a) Glycogen
- b) Cellulose
- c) Starch
- d) Chitin

Answer: c) Starch

97. What type of glycosidic bond is found

in cellulose?
- a) α-1,4-glycosidic bond
- b) β-1,4-glycosidic bond
- c) α-1,6-glycosidic bond
- d) β-1,6-glycosidic bond

Answer: b) β-1,4-glycosidic bond

98. Which sugar is a component of glycoproteins and glycolipids on cell surfaces?
- a) Mannose
- b) Glucose
- c) Sialic acid
- d) Lactose

Answer: c) Sialic acid

99. What is the primary storage form of carbohydrates in animals?
- a) Starch

- b) Glycogen
- c) Cellulose
- d) Chitin

Answer: b) Glycogen

100. What type of carbohydrate is involved in blood type determination?
- a) Monosaccharides
- b) Disaccharides
- c) Polysaccharides
- d) Glycoproteins

Answer: d) Glycoproteins

Lipids:

1. What type of fatty acids are essential and cannot be synthesized by the body?
- a) Omega-3 and Omega-6

- b) Omega-9 and Omega-12
- c) Omega-3 and Omega-9
- d) Omega-6 and Omega-12

Answer: a) Omega-3 and Omega-6

2. What is the backbone molecule in triglycerides?
- a) Sphingosine
- b) Glycerol
- c) Cholesterol
- d) Phosphatidic acid

Answer: b) Glycerol

3. What is the function of micelles in the body?
- a) Energy storage
- b) Transport of lipids
- c) Emulsification of fats
- d) Formation of cell membranes

Answer: c) Emulsification of fats

4. Which lipid is primarily responsible for forming the myelin sheath around nerve fibers?
- a) Glycolipid
- b) Sphingomyelin
- c) Triglyceride
- d) Cholesterol

Answer: b) Sphingomyelin

5. What type of bond is found in sphingolipids that is not present in glycerophospholipids?
- a) Ester bond
- b) Amide bond
- c) Glycosidic bond
- d) Hydrogen bond

Answer: b) Amide bond

6. What are the three types of glycolipids?
- a) Cerebrosides, Globosides, Gangliosides
- b) Phospholipids, Sphingolipids, Steroids
- c) Triglycerides, Waxes, Steroids
- d) Fatty acids, Alcohols, Eicosanoids

Answer: a) Cerebrosides, Globosides, Gangliosides

7. What is the primary function of lipoproteins in the body?
- a) Energy storage
- b) Transport of lipids
- c) Structural support
- d) Hormone synthesis

Answer: b) Transport of lipids

8. Which type of lipoprotein is known for transporting cholesterol from the liver to tissues?
   - a) HDL (High-density lipoprotein)
   - b) LDL (Low-density lipoprotein)
   - c) VLDL (Very low-density lipoprotein)
   - d) Chylomicrons

   Answer: b) LDL (Low-density lipoprotein)

9. What is the main structural difference between HDL and LDL?
   - a) Protein to lipid ratio
   - b) Type of lipids carried
   - c) Presence of cholesterol
   - d) Type of apoproteins

   Answer: a) Protein to lipid ratio

10. What is the significance of cis double

bonds in fatty acids?

- a) They increase the melting point
- b) They decrease the melting point
- c) They have no effect on melting point
- d) They increase saturation

Answer: b) They decrease the melting point

11. What type of fatty acid has no double bonds?

- a) Monounsaturated fatty acid
- b) Polyunsaturated fatty acid
- c) Saturated fatty acid
- d) Trans fatty acid

Answer: c) Saturated fatty acid

12. What process converts unsaturated fats into saturated fats?

- a) Dehydrogenation

- b) Hydrogenation
- c) Esterification
- d) Hydrolysis

Answer: b) Hydrogenation

13. What is the primary function of cholesterol in cell membranes?
- a) Energy storage
- b) Structural stability and fluidity
- c) Hormone precursor
- d) Transport of lipids

Answer: b) Structural stability and fluidity

14. What is the amphipathic nature of cholesterol important for?
- a) Energy storage
- b) Membrane fluidity
- c) Hormone synthesis
- d) Enzyme activation

Answer: b) Membrane fluidity

15. What is the product of cholesterol with a fatty acid attached at the hydroxyl group?
- a) Cholesterol ester
- b) Free cholesterol
- c) Lipoprotein
- d) Steroid hormone

Answer: a) Cholesterol ester

16. What type of lipids are waxes classified as?
- a) Simple lipids
- b) Complex lipids
- c) Derived lipids
- d) Cyclic lipids

Answer: a) Simple lipids

17. Which class of lipids includes hormones and vitamins?
- a) Simple lipids
- b) Complex lipids
- c) Derived lipids
- d) Cyclic lipids

Answer: d) Cyclic lipids

18. Which lipid is a major component of cell membranes and involved in signaling?
- a) Phosphatidylinositol
- b) Triglyceride
- c) Sphingomyelin
- d) Cholesterol

Answer: a) Phosphatidylinositol

19. What is the primary function of phosphatidylcholine (lecithin) in the body?
- a) Energy storage

- b) Emulsification
- c) Structural component of cell membranes
- d) Hormone synthesis

Answer: c) Structural component of cell membranes

20. What type of lipid is involved in the protective coating of plant leaves?
- a) Triglyceride
- b) Sphingolipid
- c) Wax
- d) Steroid

Answer: c) Wax

21. What is the core structure of steroids?
- a) Glycerol backbone
- b) Sphingosine backbone
- c) Four-ring structure

- d) Fatty acid chain

Answer: c) Four-ring structure

22. What is the process called when a fat is surrounded by fatty acyl chains of phospholipids and dissolved in water?
- a) Hydrolysis
- b) Emulsification
- c) Saponification
- d) Hydrogenation

Answer: b) Emulsification

23. Which molecule is the simplest glycerophospholipid?
- a) Lecithin
- b) Phosphatidic acid
- c) Cardiolipin
- d) Plasmalogen

Answer: b) Phosphatidic acid

24. What is a characteristic of trans fats?
- a) They have a cis configuration of double bonds
- b) They are easily digested by the body
- c) They are formed by partial hydrogenation
- d) They decrease the risk of coronary heart disease

Answer: c) They are formed by partial hydrogenation

25. What is the role of bile acids in digestion?
- a) Energy storage
- b) Hormone synthesis
- c) Emulsification of dietary lipids
- d) Transport of lipids

Answer: c) Emulsification of dietary lipids

26. What is the function of lipoproteins?
- a) Storage of lipids
- b) Transport of lipids in blood plasma
- c) Structural support in cell membranes
- d) Signaling molecules

Answer: b) Transport of lipids in blood plasma

27. Which lipoprotein is considered "good" cholesterol?
- a) LDL
- b) VLDL
- c) HDL
- d) IDL

Answer: c) HDL

28. What is the main function of phosphatidylethanolamine in the cell membrane?

- a) Structural stability
- b) Signaling
- c) Energy storage
- d) Hormone synthesis

Answer: a) Structural stability

29. Which fatty acid is the precursor of eicosanoids?

- a) Palmitic acid
- b) Oleic acid
- c) Linoleic acid
- d) Arachidonic acid

Answer: d) Arachidonic acid

30. What is the primary role of fatty acids in the body?

- a) Energy storage and fuel molecules
- b) Structural support in cell membranes
- c) Hormone synthesis
- d) Signaling molecules

Answer: a) Energy storage and fuel molecules

31. What is a common use of lecithin in the food industry?
- a) Flavoring agent
- b) Emulsifier
- c) Preservative
- d) Coloring agent

Answer: b) Emulsifier

32. What structural feature distinguishes waxes from other lipids?
- a) Presence of a glycerol backbone
- b) Long-chain fatty acids esterified to

long-chain alcohols
- c) Presence of sphingosine
- d) Four-ring structure

Answer: b) Long-chain fatty acids esterified to long-chain alcohols

33. Which lipid type is most abundant in the inner mitochondrial membrane?
- a) Triglycerides
- b) Cardiolipins
- c) Steroids
- d) Glycolipids

Answer: b) Cardiolipins

34. What is the function of plasmalogens in the body?
- a) Energy storage
- b) Structural component of cell membranes

- c) Protection against reactive oxygen species
- d) Hormone synthesis

Answer: c) Protection against reactive oxygen species

35. Which type of sphingolipid is involved in the formation of the myelin sheath?
- a) Glycosphingolipids
- b) Ceramides
- c) Sphingomyelin
- d) Plasmalogens

Answer: c) Sphingomyelin

36. What role do glycolipids play in the cell membrane?
- a) Energy storage
- b) Cell recognition and signaling
- c) Structural support

- d) Transport of lipids

Answer: b) Cell recognition and signaling

37. Which glycolipid is bound by cholera toxin in the human intestine?
- a) Cerebroside
- b) Globoside
- c) Ganglioside
- d) Sulfatide

Answer: c) Ganglioside

38. What is the main component of the external coating of plant leaves?
- a) Triglycerides
- b) Waxes
- c) Steroids
- d) Glycolipids

Answer: b) Waxes

39. Which lipid type is primarily responsible for cellular signaling?
- a) Triglycerides
- b) Phospholipids
- c) Steroids
- d) Fatty acids

Answer: b) Phospholipids

40. What is the importance of sialic acid in glycoproteins and glycolipids?
- a) Energy storage
- b) Structural stability
- c) Negatively charged and involved in cell recognition
- d) Hormone synthesis

Answer: c) Negatively charged and involved in cell recognition

41. Which fatty acid is the most abundant in plasma membranes?
- a) Palmitic acid
- b) Stearic acid
- c) Oleic acid
- d) Linoleic acid

Answer: a) Palmitic acid

42. What distinguishes a ceramide from other sphingolipids?
- a) Presence of a sugar group
- b) Lack of a head group
- c) Presence of a phosphate group
- d) Long-chain alcohol backbone

Answer: b) Lack of a head group

43. Which class of lipids is known for its role as hormone precursors?
- a) Simple lipids

- b) Complex lipids
- c) Derived lipids
- d) Cyclic lipids

Answer: d) Cyclic lipids

44. What type of lipid molecule is phosphatidylserine?
- a) Glycolipid
- b) Phospholipid
- c) Steroid
- d) Triglyceride

Answer: b) Phospholipid

45. What is the primary role of phosphatidylinositol in the cell membrane?
- a) Energy storage
- b) Signaling
- c) Structural stability
- d) Transport of lipids

Answer: b) Signaling

46. Which type of fatty acid contains only single bonds between carbon atoms?
- a) Unsaturated fatty acid
- b) Saturated fatty acid
- c) Polyunsaturated fatty acid
- d) Monounsaturated fatty acid

Answer: b) Saturated fatty acid

47. What is a characteristic feature of trans fatty acids?
- a) They have a cis configuration of double bonds
- b) They are found naturally in large quantities
- c) They are produced through partial hydrogenation
- d) They decrease the risk of

cardiovascular disease

Answer: c) They are produced through partial hydrogenation

48. Which lipid type is a major component of the myelin sheath and insulates nerve fibers?

- a) Triglycerides
- b) Sphingomyelin
- c) Glycolipids
- d) Phosphatidylcholine

Answer: b) Sphingomyelin

49. What is the function of cholesterol esters in the body?

- a) Energy storage
- b) Structural component of cell membranes
- c) Transport of cholesterol and fatty

acids
    - d) Signaling molecules

    Answer: c) Transport of cholesterol and fatty acids

50. What is the role of sulfatides in the brain?
    - a) Energy storage
    - b) Insulation of nerve fibers
    - c) Structural support
    - d) Cell signaling

    Answer: b) Insulation of nerve fibers

51. Which lipid class includes molecules that are amphipathic and can form bilayers?
    - a) Triglycerides
    - b) Steroids
    - c) Phospholipids

- d) Glycolipids

Answer: c) Phospholipids

52. What is the main function of glycosphingolipids in the cell membrane?
- a) Energy storage
- b) Cell recognition and signaling
- c) Structural support
- d) Transport of lipids

Answer: b) Cell recognition and signaling

53. Which type of lipid is primarily responsible for shock absorption and thermal insulation in the body?
- a) Triglycerides
- b) Phospholipids
- c) Glycolipids
- d) Steroids

Answer: a) Triglycerides

54. What is the precursor molecule for the synthesis of eicosanoids?
- a) Linoleic acid
- b) Arachidonic acid
- c) Palmitic acid
- d) Oleic acid

Answer: b) Arachidonic acid

55. What type of lipid molecule is a major component of lipoproteins?
- a) Triglycerides
- b) Phospholipids
- c) Steroids
- d) Glycolipids

Answer: b) Phospholipids

56. Which lipoprotein is known for

transporting cholesterol from tissues back to the liver?

- a) LDL
- b) HDL
- c) VLDL
- d) Chylomicrons

Answer: b) HDL

57. What is the primary function of phosphatidylserine in the body?

- a) Energy storage
- b) Structural component of cell membranes
- c) Signaling
- d) Transport of lipids

Answer: b) Structural component of cell membranes

58. Which lipid class is known for its ability

to form emulsions?

- a) Triglycerides
- b) Phospholipids
- c) Steroids
- d) Glycolipids

Answer: b) Phospholipids

59. What is the main difference between ceramides and other sphingolipids?

- a) Ceramides have a head group
- b) Ceramides lack a head group
- c) Ceramides contain a sugar group
- d) Ceramides are found only in plants

Answer: b) Ceramides lack a head group

60. What is the primary role of glycosphingolipids in the nervous system?

- a) Energy storage
- b) Insulation of nerve fibers

- c) Structural support
- d) Cell recognition and signaling

Answer: d) Cell recognition and signaling

61. Which lipid molecule is involved in the rapid transmission of action potentials?
- a) Cholesterol
- b) Phosphatidylcholine
- c) Sphingomyelin
- d) Triglyceride

Answer: c) Sphingomyelin

62. What is the role of phosphatidylinositol in the cell membrane?
- a) Energy storage
- b) Structural stability
- c) Cell signaling
- d) Hormone synthesis

Answer: c) Cell signaling

63. What is the primary function of phosphatidylethanolamine in the body?
- a) Energy storage
- b) Structural component of cell membranes
- c) Signaling
- d) Transport of lipids

Answer: b) Structural component of cell membranes

64. Which lipid type is responsible for forming the bilayer structure of cell membranes?
- a) Triglycerides
- b) Phospholipids
- c) Steroids

- d) Glycolipids

Answer: b) Phospholipids

65. What is the role of cholesterol in maintaining membrane fluidity?
- a) Increases membrane rigidity
- b) Decreases membrane fluidity
- c) Stabilizes membrane fluidity
- d) Prevents lipid oxidation

Answer: c) Stabilizes membrane fluidity

66. Which lipid is commonly used as an emulsifier in processed foods?
- a) Triglyceride
- b) Lecithin
- c) Cholesterol
- d) Sphingomyelin

Answer: b) Lecithin

67. What is the significance of the amphipathic nature of phospholipids?
- a) They store energy efficiently
- b) They provide thermal insulation
- c) They can form bilayers and micelles
- d) They act as signaling molecules

Answer: c) They can form bilayers and micelles

68. Which lipid class includes cholesterol and its derivatives?
- a) Simple lipids
- b) Complex lipids
- c) Steroids
- d) Glycolipids

Answer: c) Steroids

69. What is the primary function of

cardiolipin in mitochondria?

- a) Energy storage
- b) Structural support of mitochondrial membranes
- c) Hormone synthesis
- d) Transport of lipids

Answer: b) Structural support of mitochondrial membranes

70. Which lipid is a major component of the plasma membrane and involved in cell signaling?

- a) Triglyceride
- b) Phosphatidylinositol
- c) Sphingomyelin
- d) Cholesterol

Answer: b) Phosphatidylinositol

71. What is the function of bile acids

derived from cholesterol?

- a) Energy storage
- b) Emulsification of dietary fats
- c) Structural support of cell membranes
- d) Transport of lipids

Answer: b) Emulsification of dietary fats

72. Which lipid molecule is a precursor to steroid hormones?

- a) Lecithin
- b) Cholesterol
- c) Triglyceride
- d) Phosphatidylcholine

Answer: b) Cholesterol

73. What is the primary structural component of cell membranes?

- a) Triglycerides
- b) Phospholipids

- c) Steroids
- d) Glycolipids

Answer: b) Phospholipids

74. Which type of fatty acid is most likely to be liquid at room temperature?
- a) Saturated fatty acid
- b) Trans fatty acid
- c) Monounsaturated fatty acid
- d) Polyunsaturated fatty acid

Answer: d) Polyunsaturated fatty acid

75. What is the role of saponification in the formation of soap?
- a) Emulsification of fats
- b) Hydrolysis of triglycerides
- c) Hydrogenation of fatty acids
- d) Esterification of alcohols

Answer: b) Hydrolysis of triglycerides

76. Which lipid class includes molecules with long-chain fatty acids esterified to long-chain alcohols?
- a) Triglycerides
- b) Phospholipids
- c) Waxes
- d) Steroids

Answer: c) Waxes

77. What is the primary function of glycolipids in the nervous system?
- a) Energy storage
- b) Structural support
- c) Insulation of nerve fibers
- d) Cell recognition and signaling

Answer: d) Cell recognition and signaling

78. Which lipid type is involved in the rapid transmission of action potentials in neurons?

- a) Cholesterol
- b) Phosphatidylcholine
- c) Sphingomyelin
- d) Triglyceride

Answer: c) Sphingomyelin

79. What is the significance of the cis configuration of double bonds in fatty acids?

- a) Increases melting point
- b) Decreases melting point
- c) Has no effect on melting point
- d) Increases saturation

Answer: b) Decreases melting point

80. Which lipid molecule is a major

component of HDL and LDL particles?

- a) Triglyceride
- b) Phospholipid
- c) Cholesterol
- d) Glycolipid

Answer: c) Cholesterol

81. What is the primary role of phosphatidylcholine in the cell membrane?

- a) Energy storage
- b) Structural stability
- c) Signaling
- d) Hormone synthesis

Answer: b) Structural stability

82. Which lipid is most abundant in the inner mitochondrial membrane?

- a) Triglycerides
- b) Cardiolipins

- c) Steroids
- d) Glycolipids

Answer: b) Cardiolipins

83. What is the function of plasmalogens in the body?
- a) Energy storage
- b) Structural component of cell membranes
- c) Protection against reactive oxygen species
- d) Hormone synthesis

Answer: c) Protection against reactive oxygen species

84. Which type of sphingolipid is involved in the formation of the myelin sheath?
- a) Glycosphingolipids
- b) Ceramides

- c) Sphingomyelin
- d) Plasmalogens

Answer: c) Sphingomyelin

85. What role do glycolipids play in the cell membrane?
- a) Energy storage
- b) Cell recognition and signaling
- c) Structural support
- d) Transport of lipids

Answer: b) Cell recognition and signaling

86. Which glycolipid is bound by cholera toxin in the human intestine?
- a) Cerebroside
- b) Globoside
- c) Ganglioside
- d) Sulfatide

Answer: c) Ganglioside

87. What is the main component of the external coating of plant leaves?
- a) Triglycerides
- b) Waxes
- c) Steroids
- d) Glycolipids

Answer: b) Waxes

88. Which lipid type is primarily responsible for cellular signaling?
- a) Triglycerides
- b) Phospholipids
- c) Steroids
- d) Fatty acids

Answer: b) Phospholipids

89. What is the importance of sialic acid in

glycoproteins and glycolipids?
- a) Energy storage
- b) Structural stability
- c) Negatively charged and involved in cell recognition
- d) Hormone synthesis

Answer: c) Negatively charged and involved in cell recognition

90. Which fatty acid is the most abundant in plasma membranes?
- a) Palmitic acid
- b) Stearic acid
- c) Oleic acid
- d) Linoleic acid

Answer: a) Palmitic acid

91. What distinguishes a ceramide from other sphingolipids?

- a) Presence of a sugar group
- b) Lack of a head group
- c) Presence of a phosphate group
- d) Long-chain alcohol backbone

Answer: b) Lack of a head group

92. Which class of lipids is known for its role as hormone precursors?
- a) Simple lipids
- b) Complex lipids
- c) Derived lipids
- d) Cyclic lipids

Answer: d) Cyclic lipids

93. What type of lipid molecule is phosphatidylserine?
- a) Glycolipid
- b) Phospholipid
- c) Steroid

- d) Triglyceride

Answer: b) Phospholipid

94. What is the primary role of phosphatidylinositol in the cell membrane?
- a) Energy storage
- b) Signaling
- c) Structural stability
- d) Transport of lipids

Answer: b) Signaling

95. Which type of fatty acid contains only single bonds between carbon atoms?
- a) Unsaturated fatty acid
- b) Saturated fatty acid
- c) Polyunsaturated fatty acid
- d) Monounsaturated fatty acid

Answer: b) Saturated fatty acid

96. What is a characteristic feature of trans fatty acids?

- a) They have a cis configuration of double bonds
- b) They are found naturally in large quantities
- c) They are produced through partial hydrogenation
- d) They decrease the risk of cardiovascular disease

Answer: c) They are produced through partial hydrogenation

97. Which lipid type is a major component of the myelin sheath and insulates nerve fibers?

- a) Triglycerides
-

b) Sphingomyelin
- c) Glycolipids
- d) Phosphatidylcholine

Answer: b) Sphingomyelin

98. What is the function of cholesterol esters in the body?
- a) Energy storage
- b) Structural component of cell membranes
- c) Transport of cholesterol and fatty acids
- d) Signaling molecules

Answer: c) Transport of cholesterol and fatty acids

99. What is the role of sulfatides in the brain?
- a) Energy storage

- b) Insulation of nerve fibers
- c) Structural support
- d) Cell signaling

Answer: b) Insulation of nerve fibers

100. Which lipid class includes molecules that are amphipathic and can form bilayers?
- a) Triglycerides
- b) Steroids
- c) Phospholipids
- d) Glycolipids

Answer: c) Phospholipids