A+ Academy – Online Teaching

جامعة القدس – أبو ديس

Biology

Topic: mid revesion

Instructor: Lina khaled

WhatsApp:00962790890160

Like us on Facebook - A+Academy

Whatsapp: 00962787124146

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1. Loss of protein shape is called:
   a) dehydration b) denaturation c) renaturation d) hydrolysis

2. the number of carbons in monosaccharides usually ranges from
   a) 1-3 atoms b) 7-10 atoms c) 3-7 atoms d) 10-14 atoms

3. what is the shape of carbon skeleton?
   A) Straight b) Ring c) branched d) all of them e) none of them

4. Hemoglobin is an example of fibrous proteins:
   a) true b) false
   Hemoglobin is globular protein

5. to be functional all proteins must have quaternary structure
   a) true b) false
   Proteins that consist of one polypeptide have only tertiary structure and they are functional - quaternary structure is present only when the protein consist of more thatnone polypeptide chain

6. hydrocarbons are major components of petroleum
   a) true b) false

7. the electrons in the valence shell represents:
   a) the electron that has the lowest potential energy
   b) the outermost electrons called valence electrons
   c) the chemical reactivity of atoms
   d) all of the above
   e) b+ c
   They have the highest energy

8. which of the following bonds you can find in primary structure?
   a) hydrogen bonds
   b) ionic bonds
   c) covalent bonds
   d) A+ C
   e) none of the above
   Primary structure only have peptide bonds and they are considered covalent bond
   Covalent bond نوع الرابطة
   Peptide اسمها

9. when atoms have fewer than eight electrons, they tend to react and form more unstable compounds
   a) true b) false
   They form more **stable** compounds

10. secondary structure are stabilized by:
    a) hydrogen bonds
    b) hydrophobic interactions
    c) ionic interactions
    d) hydrogen and covalent bonds

11. the methyl group CH2 is important in the function of biological molecules
    a) true b) false
    Methyl **CH3**

12. small proteins or steroids secreted by endocrine cells that act to control or regulate specific physiological processes are called:
    a) enzymes b) hormones c) immunoglobulins d) structural proteins

13. Essential amino acids in humans include isoleucine, leucine, and cysteine
    a) true b) false

14. which of the following doesn't contribute to the stabilization of tertiary structure?
a) covalent bonds b) ionic bonds c) hydrogen bonds
d) hydrophobic interactions e) none of the above

15. which of the sentences below is considered true about macromolecules
a) macromolecules are a repeat of small molecules called polymers
b) the nucliec acids are considered an example of macromolecules
c) called macromolecules because of their small size
d) all of the above
e) only a+ C

Called monomer

Large size

16. which of the following is a transport protein?
a) thyroxine b) myosin c) albumin d) a+ c

17. what does the atomic theory state?
a) the elements are made of tiny particles called protons and neutrons
b) the elements are made of tiny particles called monomer
c) the elements are made of tiny particles called atoms
d) the elements are made of tiny particles called molecules

18. glucose, galactose, fructose are isomers
a) true b) false

19. after protein synthesis, the post translational modifications include:
a) phosphorylation b) cleavage c) adding chemical groups
d) none of the above e) all of the above

20. the stoichiometric formula of carbohydrates is:
a) (CO2H)n b) (CHO2)n c) (HC2O)n d) (CH2O)n

21. the chain of polysaccharides may be branched or unbranched, and it may contain different types of monosaccharide
a) true b) false

22. the number of protons in a nucleus is called the atomic number and sometimes equals the number of electrons in orbit around that nucleus
a) true b) false

23. which of the following amino acids contains a ring that is not aromatic
a) lys b) pro c) phe d) tyr

24. which of the following statements is true?
a) essential amino acids are uncommon amino acids
b) essential amino acids can be synthesized in the human body
c) 11 of the common amino acids are non- essential
d) none of the above

Essential amino acids: refer to those necessary to build proteins in the body, but not
those that the body produces

total amino acids= 20
9 essential, 11 non essential

25. the simplest organic compound is
a) C_2H_6 b) CO_2 c) CH_4 d) C_4H_{10}

26. which element is considered a trace element
a) nitrogen b) fluoride c) phosphate d) sulfur e) none of the above

27. the most abundant elements that make up the human body are:
    a) oxygen, carbon, hydrogen and magnesium
    b) oxygen, carbonc sodium and chloride
    c) oxygen, carbon, nitrogen and hydrogen
    d) oxygen, carbon, nitrogen and iron

28. scientists classify carbohyrates according to the number of monomer into:
    a) monosaccharides, disaccharides and polysaccharides
    b) aldoses and ketoses
    c) trioses, pentoses and hexoses
    d) all of the above

Classification according to chemical group

Classification according to number of monomers

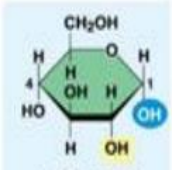
29. during cellular respiration, the energy released from glucose and that energy helps make adenosine diphospate ADP
    a) true b) false

Adenosine triphosphate ATP

30. when one monosaccharide's hydroxyl group combines with another monosaccharide's hydrogen this will lead to
    a) releasing of water molecule
    b) forming glycosidic bond
    c) undergo a dehydration reaction
    d) all of the above
    e) none of the above

31. if an atom has the same number of protons but a different number of neutrons it is
    a) atomic number b) mass number c) isotope d)atomic symbol

32. the hydroxyl group in the sugar in the picture is in
    a) alpha position b) beta position
    c) linear form d) ring shaped



33. synthesis of polymers from smaller molecules involves H_2O production
    a) true b) false

34. the carbon skeleton shape of 2-methylpropane is
    a) ring b) straight c) branched d) none of them e) all of them

35. proteins that help in the folding of other proteins are called
    a) transport proteins b) folding proteins c) regulators proteins d) chaperons

36. if there are only single bonds between neighboring carbons in the hydrocarbon chain, the fatty acid is:
    a) unsaturated
    b) polyunsaturated
    c) saturated
    d) monounsaturated

Having multiple double

Having one double bond

37. the mammals store fat in:
    a) seeds b) adipocytes c) liver d) all body cells

Plant store fat in seeds

Animals store glycogen in liver

38. in a membrane, fatty acids tails face….. while phosphate group faces:
    a) outside away from water/ inside toward water
    b) outside toward water/ inside away from water
    c) inside away from water/ outside toward water
    d) inside toward water/ outside away from water

39. fatty acids have a long chain of……. To which a ……. Is attached
    a) hydrocarbons, carboxyl group
    b) hydrocarbons, hydroxyl group
    c) glycerol, hydroxyls group
    d) glycerol, carboxyl group

40. all organic compounds have hydrogen skeleton: Carbon skeleton
    a) true b) false

41. pentane, isopentane and neopentane are organic molecules that contain the same number of atoms because that they are called hydrocarbons
    a) true b) false Called isomers

42. maltose is a disaccharide formed by a dehydration reaction between:
    a) gluose and galactose lactose
    b) fructose and and glucose sucrose
    c) fructose and galactose
    d) glucose and glucose

43. both dehydration and hydrolysis are facilitated by:
a) H2O production b) H2O consuming c) hormones d) enzymes e) a+ b

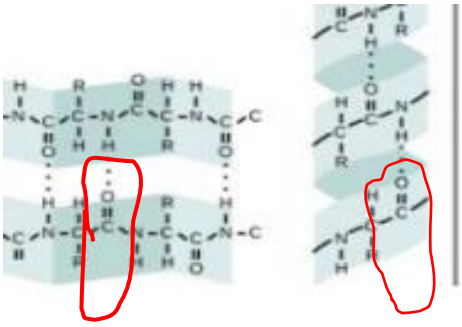
44. the matter refers to:
    a) anything that takes up shape and has mass
    b) the basic blocks of elements
    c) anything that takes up thickness and has mass
    d) anything that takes up space and has mass

45. in all amino acids the alpha carbon is linked to 4 different groups
    a) true b) false

كلهم ما عدا ال glycine لأنه ال R group لاله
عبارة عن ذرة هيدروجين ف ال alpha carbon
تبعته مرتبطة بأمينو و كاربوكسيل وذرتين هيدروجين

46. the enzyme amylase belongs to a category of enzymes called:
    a) catabolic enzymes
    b) regulatory enzymes
    c) anabolic enzymes
    d) no answer is correct

47. the bonds that stabilize the secondary structure of proteins occur between:
    a) amino and R groups
    b) carbonyl and R groups
    c) r groups
    d) amino and carbonyl groups



48. each enzyme is specific for the substrate upon which it acts
    a) true b) false

49. the function of enzymes:
a) synthesis reactions b) rearrangement reactions c) breakdown reactions
d) all are true e) none of them

50. in the secondary structure of the protein, the hydrogen bonds form between the oxygen atom in the carbonyl group in one amino acids and the hydrogen atom in amino group of another amino acid
a) true b) false

51. the name amino acid because these acids contain both amino group and central carbon atom in their basic structure
a) true b) false
The name "amino acid" because these acids contain both amino group and carboxyl acid-group in their basic structure.

52. the most common number of carbons in fatty acids are
a) 12- 18 atoms b) 3-7 atoms
c) 1-6 atoms d) 5- 20 atoms

53. all are characteristics of life except:
a) movement b) reproduction c) homeostasis
d) all of the above e) none of the above
كلهم خصائص للحياة بس بالسؤال مكتوب except يعني ما
عدا ف انتبهوا عشان هيك الجواب none مش all

.

54. Carbon has 6 electrons with 3 single electrons in its valence shell.
a) true b) false
Carbon has **4** valence electrons

55. Carbon skeletons vary in length as it can be straight, branched or ring
a) true b) false
Vary in shape: straight, branched or ring

56. Beta glucose is part of the structure of:
A. Cellulose monomers B. Amylose monomers
C. Glycogen monomers D. Amylopectin monomers

57. Lactose is a dimer of:
a) Glucose b) fructose c) galactose d) a and c

58. Which of the following monosaccharides is a hexose and ketose :
a) Ribulose b) Glucose c) Fructose d) galactose

59. breaking down a molecule by adding a water molecule is ?
A. dehydration reaction.
B. hydrolysis reaction.
C. polymerization reaction.
D. none of the above.

60. dehydration reaction means ?
A. molecules are breaking down by adding water.
B. molecules are breaking down by removing water.
C. forming a macromolecule by adding water.
D. forming a macromolecule by removing water.

61. Which of these molecules is not formed by dehydration reactions?
A) Fatty acids. B) Disaccharides.
C) DNA. D) Protein. E) Amylose.

62. One of the following can be called polymer and monomer:
A. Lipids. B. Carbohydrates. C. Proteins. D. Nucleic acids

63. Which of the following is not a polymer?
A) Glucose. B) Starch. C) Cellulose. D) Chitin. E) DNA

64. Which of the following polymers contain nitrogen?
A) Starch. B) Glycogen. C) Cellulose. D) Chitin. E) Amylopectin

65. A sugar with a carbonyl group at the terminal of the skeleton is?
A) Aldose. B) Ketose.
Ketose Have carbonyl group within its skeleton

66. One of the following is an example of Aldose?
A) Glyceraldehyde. B) Ribulose. C) Fructose. D) Dihydroxyacetone

67. One of the following is an example of ketose?
A) Glyceraldehyde. B) Ribose. C) Ribulose. D) Glucose

68. How many molecules of water are released during the polymerization of a 20 monomer-long cellulose molecule?
A) 10 B) 19 C) 20 D) 40

69. which of the following is a biological molecular but NOT a polymer?
A) protein B) nucleic acid C) lipids D) carbohydrates

70. which of the following is NOT polymer?
A) cellulose B) DNA C) glucose D) starch

71. All of the following are polysaccharides except ?
A) Lactose. B) Glycogen. C) Chitin. D) Cellulose. E) Amylopectin

72. Which of the following amino acids are polar and have hydrophilic side chains
a) serine b) threonine c) cysteine d) all of the above e) none of the above

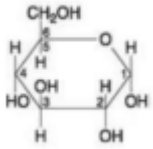
73. Which of the following is an extensively branched storage polysaccharide found in the liver and muscles of animals?
A) Glycogen. B) Starch C) Amylopectin. D) Cellulose

74. What is the chemical reaction mechanism by which cells make polymers from monomers?
A) Phosphodiester linkages . B) Hydrolysis .
C) Dehydration reactions . D) Ionic bonding of monomers .

75. Which of the following is a polysaccharide that consists of beta glucose monomers and never branched?
A) Amylose B) Amylopectin C) Cellulose D) Glycogen

76. Which of the following is true of both starch and cellulose?
A) They are both polymers of glucose.
B) They are cis-trans isomers of each other.
C) They can both be digested by humans.
D) They are both used for energy storage in plants.
E) They are both structural components of the plant cell wall.

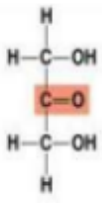
77. Which of the following descriptors is true of the molecule shown in Figure above?
A) Hexose
B) Fructose
C) Glucose
D) Hexose and fructose only
E) Hexose and glucose only



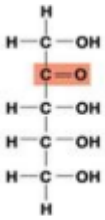
78. Molecules with which functional groups may form polymers via dehydration reactions?
A) Hydroxyl groups
B) Carbonyl groups.
C) Carboxyl groups.
D) Either carbonyl or carboxyl groups
E) Either hydroxyl or carboxyl groups

79. A molecule with the formula C18H36O2 is probably a?
A) Carbohydrate.
B) Fatty acid.
C) Protein.
D) Nucleic acid.
E) Hydrocarbon

80. what is the kind of monosaccharide in this figure
a) ketose (triose)
b) aldose (triose)
c) aldose (hexose)
d) ketose (pentose)



81. the monosaccharide in the picture is called:
a) glucose
b) ribose
c) galactose
d) ribulose



82. How many molecules of water are needed to completely hydrolyze a polymer that is 11 monomers long?
A) 12 B) 11 C) 10 D) 9

83. The difference between an aldose sugar and a ketose sugar is _____.
A) the number of carbon atoms.
B) the position of the hydroxyl groups.
C) the position of the carbonyl group.
D) the ring form and the linear chain

84. This structure represents:
A) Unsaturated fatty acid with kink due to cis bond
B) Unsaturated fatty acid with kink due to trans bond
C) saturated fatty acid with kink due to cis bond
D) saturated fatty acid with kink due to trans bond

85. In carbohydrates, the ratio of hydrogen (H) to oxygen (O) is _____.
A) 1:1 B) 2:1 C) 3:1 D) 4:1

86. Phospholipids and triglycerides both…
A) Contain serine or some other organic compound. In phospholipids only
B) Have three fatty acids. In triglycerides only
C) Have a glycerol backbone.
D) Have a phosphate. In phospholipids only

87. Saturated fats _____.
A) Are more common in plants than in animals. Are more common in animals
B) Have multiple double bonds in the carbon chains of their fatty acids. Don't have double bonds
C) Are generally liquid at room temperature. They are solid at room temp
D) Contain more hydrogen than unsaturated fats that consist of the same number of carbon atoms.

88. which of the following has carboxyl group in their structure?
A) Glycerol. B) Fatty acid. C) Glycogen. D) Starch.

89. lysine and arginine have positively charged in side chains, and therefore these amino acids are also acidic amino acids.
a) true basic
b) false

90. Which of the following is consisting of three fatty acids and glycerol?
A) Fats. B) Phospholipids. C) Steroids. D) all of the above.

91. Which of the following is consisting of four fused rings?
A) Fats. B) Cellulose. C) Steroids. D) Phospholipids.

92. All of the following contain amino acids except?
A) Hemoglobin. B) Cholesterol. C) Antibodies. D) Enzymes. E) Insulin.

93. The polypeptide backbone consists of all of the following except.
A) R-group. B) Alpha carbon. C) Amino group. D) Carboxyl group.

94. There are 20 different amino acids. What makes one amino acid different from another?
A) Different side chains (R groups) attached to a carboxyl carbon
B) Different side chains (R groups) attached to the amino groups
C) Different side chains (R groups) attached to an α carbon
D) Different structural and optical isomers
E) Different asymmetric carbons

95. Which of the following is true about the side chain (R-group)?
A) It makes the amino acids differ from each other.
B) Play a major role in the primary structure of protein.
C) It's not attached to the alpha carbon.
D) None of the above.

96. "The ability of copying itself" is a characteristic of?
A) RNA. B) DNA. C) FAT. D) R-group.

97. The mRNA codon for the DNA sequence AGT would be:
A. UCA B. AGU C. TCA D. AGT

98. Which class of macromolecules have the most diverse range of functions
a) carbohydrates b) proteins c) lipids d) nucliec acids

99. proteins are composed of:
a) fatty acids b) amino acids c) nucleic acids d) all of the above

100. There are 25 common a 20 amino acids proteins.
a) true b) false

101. valine, methionine, and alanine are nonpolar or hydrophilic in nature
a) true b) false hydrophobic

DNA
102. RNA is the genetic material in all living organisms, ranging from single-celled bacteria to multicellular mammals.
a) true b) false

103. DNA is found in:
a) nucleus b) chloroplasts c) mitochondria d) all of the above

104. in eukaryotic, DNA forms a complex with histone proteins to form genome, the substance of eukaryotic chromosomes.
a) true
b) false chromatin

105. the feature that all lipids have is:
a) hydrophobic b) contain fatty acids c) are liquid d) all of the above

106. Physiological adaptation includes:
a) Bird migratior Behavioral adaptation
b) Human body temperature
c) Hibernation d) all of the above e) B+ C

107. Metabolism is a set of chemical reactions that convert "food" into energy
a) true b) false

108. Matter is composed of:
a) compounds b) elements c) molecules d) all of the above

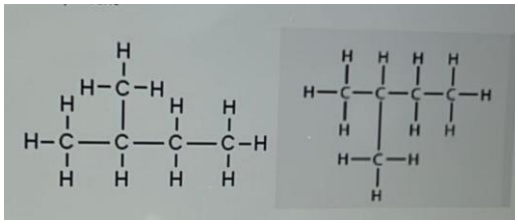
109. which is true about elements:
a) basic building blocks of matter that can be broken down by chemical means **Cannot** be broken down
b) composed of one type of atom
c) cannot combine to form compounds **Can** combine
d) there are 90 natural elements **92**

110. benzene and cyclohexane are branched
a) true b) false ring

111. all true about hydrocarbons except:
a) they are organic compounds consist of carbon and hydrogen only.
b) they are major components of petroleum.
c) they can give relatively large amount of energy.
d) they are hydrophobic compounds
e) none of the above

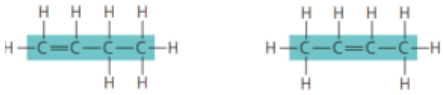
112. Compounds that have the same numbers of atoms of the same elements but with different structure and properties are called isotopes
a) true b) false isomers

113. the following molecules are:
a) structural isomers
b) enantiomers
c) geometric isomers
d) none of the above



114. the bond between carbon and hydrogen is:
a) polar b) nonpolar c) ionic d) hydrogen bond

115. the following molecules are:
a) structural isomers
b) enantiomers
c) geometric isomers
d) none of the above

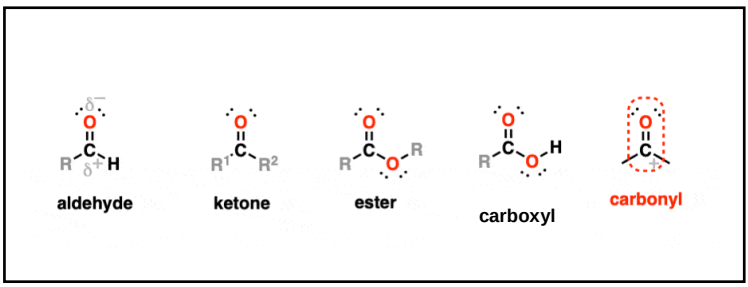


116. breaking down polysaccharides includes all of the following except:
a) release energy
b) hydrolysis
c) condensation reaction
d) H_2O consuming

117. geometric isomers are isomers that are mirror images of each other.
a) true b) false enantiomers

118. Enzymes are macromolecules.
a) true b) false

119. $R_2C=O$ group is:
a) aldehyde
b) hydroxyl
c) ester
d) ketone



120. Which of the following functional groups gives acidic properties to the molecule?
a) carboxyl group b) amino group c) carbonyl group d) methyl group

121. Which of the following functional groups gives basic properties to the molecule?
a) carboxyl group b) amino group c) carbonyl group d) methyl group

122. Which of the following functional groups gives hydrophobic properties to the molecule?
a) carboxyl group b) amino group c) carbonyl group d) methyl group

123. During fat formation how many water molecules are released?
a) 1 b) 2 c) 3 d) no water is released

124. Example on monounsaturated fat is canola oil and on polyunsaturated fat is olive oil
a) true b) false

Monounsaturated: olive oil
Polyunsaturated: canola oil

125. trace elements include all of the following except:
a) iron b) fluoride c) oxygen d) iodine

126. H2 is considered…… while H2O is considered
a) both compounds
b) both molecules
c) molecule only / compound only
d) compound only/ molecule only

Remember: compound must consist from different atoms
Molecules can have the same or different atoms
So H2 is molecule only and H2O is molecule and compound

127. Choose the odd one
a) glucose b) glycogen c) cellulose d) starch

All are polysaccharide but glucose is monosaccharide

128. glycogenesis occurs in the body when blood sugar increase
a) true b) false

129. the level of organization in ascending order:
a) atoms➔ molecules➔ organelles➔ organs➔ organism
b) atoms➔ cells➔ system➔ organs ➔ organism
c) atoms➔ molecules➔ organelles➔ cells➔ tissue➔ organ
d) atoms➔ cells➔ tissue➔ system➔ organism

Ascending order: Atoms➔ molecules➔ organelles➔ cells➔ tissue➔ organ➔ system➔ organism

Descending order: organism➔ system➔ organ➔ tissue➔ cells➔ orgalennes➔ molecules➔ atoms

130. the storage sugar in plants is called:
a) lactose b) cellulose c) starch d) glycogen