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Entrance examination for grade 12 from 1995 – 2011

Grade 11 unit 2

Biochemical molecules

1, Which of the following is a disaccharide found in cells and consists of the same sub units?

A, Glucose B, Maltose C, Sucrose D, Galactose

2, Choose the one that helps to reduce the risk of developing cancer

A, Eating diets that consists of more fatty foods B, eating foods with more proportion of dietary fiber

C, Refraining from smoking cigarette D, Having blood transfusion

3, Which of the following is formed by condensation of monosaccharaides or by hydrolysis of polysaccharides?

A, glucose B, starch C, Glycogen D, Disaccharides

4, Choose the class of organic compound in which steroids are classified

A, Protein B, Carbohydrate c, Nucleic acid D, Lipid

5, Which of the following is used as source of energy for the body ass the last resort?

A, carbohydrate B, glycogen C, Fatty acid D Protein

6, Who might be considered a more likely passive smoker?

A, One who smokes cigarette without filter

B, One who smokes less than ten packets of cigarette per day

C, A smoker but who is not chain smoker

D, A nonsmoker woman whose chain smoker husband smokes in the house without restraint

7, which of the following biological molecule known as the energy currency of the cell?

A, Glucose B, Adenosine triphosphate C, Sucrose D, Starch

8, If you want to make general test for the presence of carbohydrates in a solution, which testing protocol would you follow?

A, Benedict's test B, Molisch test C, Starch test D, Biuret test

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9, Which property of water keeps lake inhabiting organisms from freezing in winter in cold regions like arctic region?

A, High latent heat of vaporization B, high heat of fusion

C, High surface tension D, Low density of solid state

10, How many carbon atoms are found in the sugar component of nucleotide?

A, Three B, Four C, Five D, six

11, Why is it that neutral fat do not dissolve in water?

A, They form hydrogen bond with water

B, Water is polar and neutral fat is also polar

C., Water is non-polar and neutral fat is also non polar

D, Water is polar and neutral fats are non-polar

12, A sugar found in DNA and RNA molecule is

A, Triose B, Pentose C, Hexose D, Tetrose

13, What is the building block of protein?

A, Fatty acid B, Amino acid C, Nucleotides D, Monosaccharaides

14, Which level of a protein structural organization is represented by its amino acid sequence?

A, Primary structure B, Secondary structure C, Tertiary structure d, Quaternary structure

15, Enzymes of plant cells are made of which organic compound?

A, Lipid B, Starch C, Cellulose D, Protein

16, Which of the following the substance that is used to check for the presence of starch in a solution?

A, Sodium chloride B, Iodine C, Magnesium D, Fluorine

17, Among the elements listed below select the one that is not found in carbohydrates?

A, Hydrogen B, Carbon C, Nitrogen D, Oxygen

18, Which of the following nitrogenous bases is found only in RNA?

A, Cytosine B, Guanine C, Uracil D, thymine

19, Which one of the following compound is quickly absorbed through the wall of the stomach?

A, Alcohol B, Lipid C, Sucrose D, Protein

20, Which of the following compound is basic unit of proteins?

A, Sugar B, Amino acid C, Lipids D, Nucleic acid

21, Which of the following polysaccharide has no structural function?

A, Glycogen B, chitin C, Cellulose D, Murein

22, Which of the following organic molecules is the most abundant in animal tissue?

A, Carbohydrates B, Lipids C, Proteins D, nucleic acids

23, What is the name of the chemical process in which polymers are converted to monomers in the cells?

A, Anabolism B, Hydrolysis C, condensation D, dehydration system

24, Which of the following elements occur more abundantly in the living organisms than the others?

A, Aluminum B, Lead C, Phosphorus D, Zink

25, The DNA of certain organisms has guanine as 30% of its bases. What percentage of its bases would be counted for by adenine?

A, 105 B, 20% C, 30% D, 60%

26, Both plants and humans keep in their bodies' stored form of carbohydrates. What are these stored forms called respectively?

A, Glycogen, Starch B, Starch, Cellulose C, starch, glycogen D, Cellulose, glycogen

27, To which groups of compounds do enzymes belong?

A, Lipoprotein B, Fibrous protein C, Globular protein d, Deoxy ribonucleic acid

28, In which of the following is macromolecule correctly matched with its monomer building block?

A, Carbohydrate – glycerol B, Protein – fatty acid

C, Lipids – amino acids D, Nucleic acid – nucleotides

29, How many carbon atoms are contained in two molecules of glucose?

A, 6 B, 12 C, 16 D, 24

30, Which of the following is the most abundant form of carbohydrates on earth?

A, Starch B, Cellulose C, Glycogen D, Chitin

31, Which of the following elements is found in protein and nucleic acids but does not occur in carbohydrates

A, Carbon B, Nitrogen C, Oxygen C, Hydrogen

32, What is stored form of sugar that is found in human tissues?

A, Cellulose B, Coenzyme C, Nucleic acid D, Glycogen

33, Which of the following classes of crops is a good source of proteins?

A, Leaf vegetables B, cereals C, Pulses D, root and tubers

34, What makes phospholipid molecules arrange themselves into bilayer in water medium?

A, The double bond of fatty acid B, the length of fatty acid

C, The presence of hydrophobic and hydrophilic groups D, Their high solubility in water

35, Which of the following is polysaccharide?

A, Sucrose B, glucose C, Cellulose D, fructose

36, Which of the following compound is quickly absorbed through the wall of the stomach?

A, Fat B, protein C, Sugar D, Alcohol

37, Which of the following is most abundant polysaccharide found in plants?

A, glycogen B, Celluloses C, Sucrose d, Starch

38, Which of the following molecules is capable of mutation?

A, Nucleic acid B, protein C, Carbohydrates D, Lipids

39, Which alternative correctly matches the polymers with its monomers?

A, Carbohydrate, amino acid B, Protein, Monosaccharaides

C, Nucleic acid, nucleotide D, Lipids, fat

40, Which one of the following carbohydrates are polysaccharides except which?

A, Glucose B, Cellulose C, Starch D, Glycogen

41, Which one of the following sugars do babies get from the milk of their mothers?

A, Maltose B, Sucrose C, Lactose D, Fructose

42, Which of the following contains phosphate group in its molecule?

A, Nucleotide B, Protein C, Cellulose D, Simple sugar

43, Which of the following are not included in lipids?

A, Nitrogen bases B, Waxes C, Steroids D, Phospholipids

44, Which property of water keeps the bottom of the lakes and the life there in from being frozen during cold winters in temperate region?

A, Its highest density at $4^{o}C$ B, Its high heat of vaporization

C, Its high boiling point D, Its high latent heat of fusion

45, Which of the following helps to keep the biological members in a fluid state?

A, Phospholipids B, Waxes C, Cholesterol D, Water

46, Which of the following compound is an important component of the exoskeleton of arthropods such as insects?

A, Oil B, Sugar C, protein D, Chitin

47, How many different kinds of amino acids are there for protein synthesis?

A, Twenty B, twenty four C, Twenty six D, twenty two

48, Which of the following compound is an important component of bacterial cell wall?

A, Chitin B, Peptidoglycan C, cellulose D, pectin

49, How many carbon atoms are contained in single molecules of sucrose?

A, 6 B, 12 C, 24 D, 48

50, Which of the following pairs of elements are found in all carbohydrates in addition to the element carbon?

A, Nitrogen and oxygen B, Hydrogen and oxygen

C, Hydrogen and nitrogen C, Phosphorus and nitrogen

51, In the process of amino acid condensation, which one of the following happens?

A, Oxygen is used up B, CO_2 is released

C, water is released as a byproduct D, Protein is broken down into amino aid

52, Which of the following properties of water makes sweat an effective body cooler?

A, Its high specific heat B, Its high surface tension

C, It is low density when frozen D, Its high heat of vaporization

53, In which of their structural parts do different molecules of amino acids differ from one another?

A, In their R group B, In their amino group

C, In their carbonyl group D, In their alpha carbon group

54, If one mixes sample of fruit juice and some drops of Benedict's solution and obtains a brick red precipitate upon warming the mixture, what does the juice contain?

A, starch B, Reducing sugar C, Sucrose D, protein

55, All proteins contain carbon, Hydrogen, Oxygen and what other elements?

A, Chlorine, B, Fluorine C, Nitrogen D, Sulfur

56, How many carbon atoms are there in one disaccharide molecule?

A, 6 B, 12 C, 18 D, 24

57, What makes unsaturated fatty acids different from saturated fatty acids?

A, the presence if long chain of carbons B, The presence of one or more double bonds

C, The presence of large number of hydrogen atoms D, their occurrence as solid at room temperature

58, Which of the following pairs of molecules are known to have catalytic activity?

A, lipids and protein B, carbohydrates and protein C, Protein and RNAs D, Proteins and DNAs

59, What is the name of sugar found in milk?

A, Glucose B, Lactose C, Maltose D, Sucrose

60, Which of the following crops is considered to be the best choice for the better balance of essential amino acids as human diet?

A, Maize B, Quinoa C, Rice D, wheat

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61, In which of is content RNA differing from DNA?

A, Deoxyribose and guanine B, Ribose and uracil C, Ribose and thymine D, phosphate and adenine

62, What can one conclude about the content of food staff if a mixture of benedict solution and the food staff remain blue after heating?

A, It contains protein B, It lacks starch C, it contains fat D, It lacks reducing sugar

63, Which of the following substances are all inorganic?

A, Water, sugar, calcium, carbonate B, water, calcium, carbonate, carbon dioxide

C, Carbon dioxide, amino acid, fatty acid D, Carbon dioxide, amino acid, fatty acid

64, Which of the following compounds are both members of the pair are polymers of carbohydrates that naturally occur in plant only?

A, Starch and chitin B, Starch and cellulose c, Glycogen and cellulose D, Glycogen and chitin

65, Which of the following is generally expected to give better health benefits when present in human diet?

A, Animal fat B, Saturated fatty acid

C, Monounsaturated fat acid D, Polyunsaturated fatty acid

66, Which one of the following molecules in living things is not an organic molecule?

A, Sugar B, Nucleotide C, Amino acid D, Water

67, Which molecule in the cell is constituent of gene?

A, Nucleic acid B, Protein C, Lipid D, Carbohydrate

68, Which of the following is a distinguishing feature of amino acid?

A, Carbon B, Oxygen C, Hydrogen D, nitrogen

69, How many carbon and oxygen atoms are there in molecules of maltose?

A, 6 carbon and 6 oxygen B, 12 carbon and 11 oxygen

C, 11 carbon and 12 oxygen D, 24 carbon and 12 oxygen

70, Which of the following carbohydrates has structural function?

A, Cellulose B, Glycogen C, Starch D, sucrose

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71, Which of the following is true about saturated fatty acid?

A, they have single bond between carbon atoms

B, they are the same as polyunsaturated fatty acid

C, they are the same as monounsaturated fatty acid

D, they have double bonds between carbon atoms

72, Which of the following is true about the substance represented by the chemical formula $C_2H_5NO_2$?

A, Simple sugar B, inorganic substance C, Fatty acid D, Amino acids

73, Choose the one that represents the chemical formula of organic compound?

A, $C_{12}H_{22}O_{11}$ B, $Mg(OH)_2$ C, NH_3 D, NaCl

74, How are unsaturated fats distinguished?

A, they are made up of glucose and fructose

B, they are made up of amino acids and glycerol

C, they have double bonds in their carbon chains

D, they have only single bonds at the product of attachment

75, Which of the following molecule is produced when a lipid molecule is hydrolyzed?

A, Amino acid and water B, Amino acid and glucose

C, Fatty acid and glycerol D, Glucose and glycerol

76, What is the molecule that supplies the quickest and sustainable source of energy to cells?

A, Lactose B, Sucrose C, ATP D, lipid

77, A carbohydrate is known to have 12 carbon atoms in the whole molecule. What would this compound be?

A, Polypeptide B, Disaccharide C, Monosaccharide D, Polysaccharide

78, Which of the following molecules is not polymer?

A, Protein B, Lipid C, Nucleotide D, Starch

79, If a certain food staff gave positive result with Benedict's test only after it was hydrolyzed with hydrochloric acid, which of the following substances could it be?

A, Non-reducing sugar B, Nucleic acid C, Lipid D, Protein

80, Which level of structural organization do proteins have the alpha helix shape?

A, Primary structure B, Secondary structure C, Tertiary structure D, Quaternary structure

81, What is the element found in nucleic acid?

A, Calcium B, Iron C, magnesium D, Phosphorus

82, The most complex structure of protein is called?

A, Primary structure B, Secondary structure C, Tertiary structure D, Quaternary structure

83, In the formation of macromolecules, what type of reaction would join two sub units together?

A, Hydrolysis reaction B, Dehydration reaction C, Denaturation reaction D, hydrophobic reaction

84, Which are the four most abundant elements in the living cells?

A, Carbon, oxygen, sulfur, phosphorus B, carbon, oxygen, hydrogen, nitrogen

C, Carbon, oxygen, nitrogen, sulfur D, Carbon, oxygen, sulfur, magnesium

85, Which of the following is an inorganic molecule?

A, $CaCO3$ B, $CH4$ C, $C12H22O11$ D, $C18H36O2$

86, To which group of organic compounds do the triglycerides and waxes belong?

A, Carbohydrates B, Proteins C, Lipids D, Vitamins

87, Which of the following is true about proteins?

A, They are made up of twenty fatty acids B, They are triangular in shape

C, they are made up of amino acids D, They release more energy than carbohydrates

88, Which of the following properties of water allows mosquito larvae to hung themselves down into the water from the water surface?

A, Its high specific heat capacity B, its high latent heat of vaporization

C, Its high surface tension D, Its low density in solid state

89, Which one of the following is functional group of fatty acid?

A, Ketone group B, Aldehyde group C, Amino group D, carboxyl group

90, Which of the following food types would most likely give a negative result upon addition of iodine solution?

A, Bread B, Butter C, Biscuit D, Potato

91, Which one of the following functions, do triglycerides accomplish in the cell?

A, Increase density of tissue and cells B, Increase thermal insulation

C, yield limited amount of ATP for the cell D, Facilitate entry of excess water into the cell

92, How many fatty acids would a cell need to form molecules of triglyceride?

A, Two B, Four C, Five D, three

93, Which of the following can serve as raw materials for industries that produce glucose?

A, Nucleic acid b, protein C, lipid D, Starch

94, How many known amino acids are there?

A, About 10 B, about 35 C, About 20 D, About 46

95, Which of the following classes of fatty acid is without carbon carbon-double bond?

A, Monounsaturated fatty acid B, Unsaturated fatty acid

C, Saturated fatty acid D, Polyunsaturated fatty acid

96, What is the substance that helps to keep the biological membrane in a fluid state?

A, Waxes B, Water C, cholesterol D, Phospholipid

97, Why does sucrose give a negative result when mixed and heated with benedict's solution?

A, because it is not sugar molecule B, because it is a reducing sugar

C, because it is non-reducing sugar D, because it is not monosaccharide

98, Which of the following fatty acid is healthier when used as human food source?

A, Saturated fatty acid B, Monounsaturated fatty acid

C, Polyunsaturated fatty acids D, fatty acids in animal products

99, Which one of the following is different from the other three?

A, Starch B, Glycogen C, Cellulose D, Maltose

100, Which level of protein structural organizations involves two or more polypeptide?

A, Primary structure B, Secondary structure C, Tertiary structure D, Quaternary structure

101, Which of the following element is most abundant in living things?

A, Nitrogen B, carbon C, Hydrogen D, Oxygen

102, When a drop of iodine solution is added to a solution of food stuff and the food stuff turns dark blue, what does the food stuff contain?

A, Reducing sugar B, Disaccharide C, Glucose D, Starch

103, Among the following organic molecules, identify the one that does not contain nitrogen?

A, Starch B, Protein C, DNA D, RNA

104, Which of the following alternatives contains only organic molecules?

A, Calcium carbonate, Glucose, Methane

B, Carbon dioxide, sodium chloride, lysine

C, Linoleic acid, glycine, methane

D, Water, carbon dioxide, Calcium oxide

105, Which test is suitable for checking the presence of lipid in food stuff?

A, Biuret test B, Benedict's test C, Emulsion test D, Iodine test

106, Of the following organic molecules, which one includes a pentose sugar?

A, Glucose B, fructose C, Galactose D, Deoxyribose

107, Which of the following properties of water makes a sweat a good body coolant?

A, Its strong surface tension B, its low density in solid state

C, its strong adhesion to the surface D, its high heat of vaporization

108, How many molecules of glycerol and fatty acids, respectively, are needed to form 100 molecules of triglyceride fat?

A, 50 and 50 B, 100 and 100 C, 100 and 300 D, 150 and 400

109, How are organic molecules distinguished from inorganic molecules? Organic molecules always contain

A, Oxygen and hydrogen B, Carbon and oxygen C, Oxygen and nitrogen D, Carbon and hydrogen

110, What is the possible effect of the weak hydrogen bond among water molecules?

A, It helps the water to boil at lower temperature

B, It results in the crystal shape of eyes

C, it plays a significant role in the interaction of water molecules with hydrophobic surface

D, It speeds up photosynthesis

111, To which groups of sugar can the molecule dihydroxyacetone be classified?

A, Pentose sugars b, Hexose sugars C, triose sugars D, oligo sugars

112, Which of the following two elements are found in all organic molecules?

A, Carbon and oxygen B, Carbon and nitrogen C, Carbon and hydrogen D, Carbon and phosphorus

113, If two molecules of six carbon sugars are condensed to form a disaccharide, which of the following is the correct molecular formula of the disaccharides?

A, $C_{12}H_{24}O_{12}$ B, $C_6H_{12}O_6$ C, $C_{11}H_{12}O_{11}$ D, $C_{12}H_{22}O_{11}$

114, What are the compounds that have the chemical composition but different arrangement of atoms?

A, An ions B, Polymers C, Isomers D, Monomers

115, Of the following four elements, which one is the least abundant in the living things?

A, Oxygen B, Hydrogen C, Sulfur D, Carbon

116, One of the following is non-carbohydrate molecule

A, Collagen B, Cellulose C, Starch d, Glycogen

117, which of these elements is known to have less than 10% occurrence in many cells?

A, Carbon B, Nitrogen C, Hydrogen D, Oxygen

118, when glucose molecules are joined by α-linkage which of the following carbohydrate is obtained?

A, Starch B, Lactose C, glycogen D, cellulose

119, Lipids to become sphingolipids must contain

A, Glycerol B, Triglycerides C, Alcohol D, Nitrogen

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Answer

No.	Answer	No.	Answer	No.	Answer	No.	Answer	No.	Answer
1	B	26	C	51	C	76	C	101	B
2	C	27	C	52	A	77	B	102	D
3	D	28	D	53	A	78	C	103	A
4	D	29	B	54	A	79	A	104	C
5	D	30	B	55	C	80	B	105	C
6	D	31	B	56	B	81	D	106	D
7	B	32	D	57	B	82	D	107	D
8	B	33	C	58	C	83	B	108	C
9	C	34	C	59	B	84	B	109	D
10	C	35	C	60	B	85	A	110	D
11	D	36	D	61	B	86	C	111	C
12	B	37	B	62	D	87	C	112	C
13	B	38	A	63	B	88	D	113	D

14	A	39	C	64	B	89	D	114	C
15	D	40	A	65	D	90	B	115	C
16	B	41	C	66	D	91	B	116	A
17	C	42	A	67	A	92	D	117	B
18	C	43	A	68	D	93	D	118	A
19	A	44	B	69	B	94	C	119	D
20	B	45	C	70	A	95	C	120	
21	A	46	D	71	A	96	C	121	
22	C	47	A	72	D	97	C	122	
23	B	48	B	73	A	98	C	123	
24	C	49	B	74	C	99	D	124	
25	B	50	B	75	C	100	D	125	

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