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Med learn

Past Papers “Biology”

Full material

First material

Chapter 3

1) The oxygen atom in a water molecule due to its high electronegativity:

- A. One negative charge
- B. Two negative charges
- C. One positive charge
- D. Two positive charges
- E. None of the above

Answer: B

2) Water is able to form hydrogen bonds because

- A. oxygen has a valence of.
- B. the water molecule is shaped like a tetrahedron.
- C. the bonds that hold together the atoms in a water molecule are polar covalent bonds.
- D. the oxygen atom in a water molecule has a weak positive charge.
- E. each of the hydrogen atoms in a water molecule is weakly negative in charge.

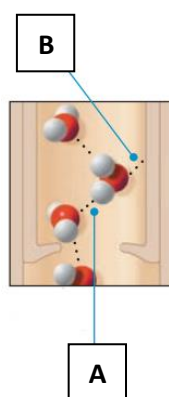
Answer: C

3) Each water molecules can form hydrogen bond with other _____ molecules

- A. 4
- B. 3
- C. 2
- D. 1

Answer: A

4) According to the figure which letters represent adhesion and which represent cohesion?



Answer:

A → cohesion

B → adhesion

5) Which of the following effects is produced by the high surface tension of water?

- A. Lakes don't freeze solid in winter, despite low temperatures
- B. A water strider can walk across the surface of a small pond
- C. Organisms resist temperature changes, although they give off heat due to chemical reactions.
- D. Water can act as a solvent
- E. The pH of water remains exactly neutral.

Answer: B

6) Which of the following takes place as an ice cube cools a drink?

Answer: B

- A. Molecular collisions in the drink increase.
- B. Kinetic energy in the drink decreases.
- C. A calorie of heat energy is transferred from the ice to the water of the drink.
- D. The specific heat of the water in the drink decreases.
- E. Evaporation of the water in the drink increases.

7) Which of the following statements correctly defines a kilocalorie?

Answer: D

- A. the amount of heat required to raise the temperature of 1 g of water by 1°F
- B. the amount of heat required to raise the temperature of 1 g of water by 1°C
- C. the amount of heat required to raise the temperature of 1 kg of water by 1°F
- D. the amount of heat required to raise the temperature of 1 kg of water by 1°C
- E. the amount of heat required to raise the temperature of 1,000 g of water by 1°F

8) The property that can make water resistant to changing in its temperature?

Answer: B

- A. High surface tension
- B. High specific heat
- C. High heat of evaporation
- D. Its V shape
- E. Covalent bond between water molecules

9) How much heat must be absorbed by 10 grams of water to raise its temperature by 5 ° C ?

(Specific heat of water ~ 4 J) :

Answer: A

- A . 200 J
- B . 40 J
- C. 4 J
- D. 1000 J
- E . 500 J

10) When water vaporizes, which of the following bonds is broken?

Answer: A

- A. Hydrogen.
- B. Ionic.
- C. Polar covalent.
- D. Non polar covalent.

11) Temperature usually increases when water condenses. Which behavior of water is most directly responsible for this phenomenon?

Answer: C

- A. the change in density when it condenses to form a liquid or solid
- B. reactions with other atmospheric compounds
- C. the release of heat by the formation of hydrogen bonds
- D. the release of heat by the breaking of hydrogen bonds
- E. the high surface tension of water

12) At what temperature is water at its densest?

- A. 0°C
- B. 212°C
- C. 32°C
- D. 100°C
- E. 4°C

Answer: E

13) The sphere of water molecule around an ions is known as:

- A. Hydration shell
- B. Cohesion
- C. Adhesion
- D. Surface tension

Answer: A

14) Why does ice float in liquid water?

- A. The liquid water molecules have more kinetic energy and thus support the ice.
- B. The ionic bonds between the molecules in ice prevent the ice from sinking.
- C. Ice always has air bubbles that keep it afloat.
- D. Hydrogen bonds stabilize and keep the molecules of ice farther apart than the water molecules of liquid water
- E. The crystalline lattice of ice causes it to be denser than liquid water.

Answer: D

15) Hydrophobic substances such as vegetable oil are:

- A) nonpolar substances that repel water molecules.
- B) nonpolar substances that have an attraction for water molecules.
- C) polar substances that repel water molecules.
- D) polar substances that have an affinity for water.
- E) charged molecules that hydrogen-bond with water molecules.

Answer: A

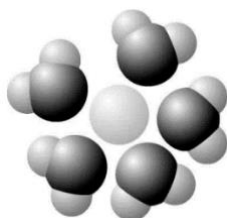
16) The tendency of water molecules to stay close to each other as a result hydrogen bonding :

- A. Acts to moderate temperature.
- B. Keeps water moving through the vessels in tree trunk.
- C. Is called cohesion.
- D. Provide the surface tension that allows leaves to float on water.
- E. All of the listed responses are correct.

Answer: E

17) Based on your knowledge of the polarity of water molecules, the solute molecule is most likely:

- A) positively charged.
- B) negatively charged.
- C) without charge.
- D) hydrophobic.
- E) nonpolar.

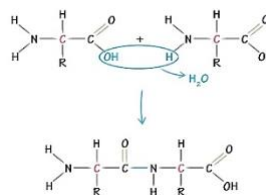


Answer: A

Chapter 5

1) What is formed in the reaction shown & the type of reaction?

- A. Ester bond /dehydration reaction
- B. Peptide bond /dehydration reaction
- C. hydrogen bond / hydrolysis reaction
- D. ionic bond / hydrolysis reaction



Answer: B

2) Sulfur can be found in:

- A. Proteins
- B. Starch
- C. DNA
- D. Cholesterols
- E. Fats

Answer: A

3) All of the following considered as lipids except of:

- A. Fats
- B. Phospholipids
- C. Some waxes
- D. Cholesterols
- E. All of them are lipids

Answer: E

4) The sugar that have nitrogen containing appendage in their monomer

- A. Cellulose
- B. Starch
- C. Glycogen
- D. Chitin

Answer: D

5) Insoluble fibers is

- A. Carbs
- B. Cellulose
- C. Starch
- D. Glycogen
- E. A + B

Answer: B

6) Disulfide bridge can stabilize _____ structure of protein

- A. Primary
- B. Secondary
- C. Tertiary
- D. Quaternary
- E. All of the above

Answer: C

7) Which of the following doesn't contain amino acids

- A. Hemoglobin
- B. Collagens
- C. Enzymes
- D. RNA
- E. Insulin

Answer: D

8) Large organic molecules are usually assembled by polymerization of few kinds of simple subunits
Which of the following is exception to this statement?

- A. Steroid
- B. Cellulose
- C. DNA
- D. An enzyme
- E. Contractile protein

Answer: A

9) Lipids are a group of molecules that _____

- A. Contain peptide bonds
- B. Mix poorly with water
- C. Contain polar parts
- D. All of the above
- E. A + B

Answer: B

10) 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
- E. 8

Answer: C

11) Secondary structure of protein form by hydrogen bonding between _____

- A. Backbone
- B. Side chain
- C. R group
- D. Amino groups
- E. None of the above

Answer: A

12) Which of the following is "Storage carbs in plant

- A. Starch
- B. Cellulose
- C. Glycogen
- D. Chitin
- E. Insulin

Answer: A

13) Enzymes are usually _____

- A. Carbs
- B. Fats
- C. Nucleic acid
- D. Monosaccharides
- E. Protein

Answer: E

14) Animals store glucose in the form of which macromolecule

- A. Amylose
- B. Glycogen
- C. Glycerol
- D. Cellulose

Answer: B

15) Which of the following is true about globular proteins

- A. It's hydrophilic amino acids can be found at the surface
- B. It's hydrophilic amino acids can be found in the core
- C. It's hydrophobic amino acid can be found at the surface
- D. It's hydrophobic amino acid can be found in the core
- E. A + D

Answer: E

16) Which of the following is mismatched

- A. Polypeptide = peptide bond
- B. Fats = ester bond
- C. Carbs = glycosidic linkage
- D. All of them are correct

Answer: D

17) Which of the following is true about DNA

- A. It's 5 end contains OH
- B. It's 3 end contains phosphate group
- C. It contains ribose sugar in its nucleotide
- D. It is found as a double helix molecule

Answer: D

18) The minimum number of carbons in monosaccharide is

- A. 4
- B. 5
- C. 3
- D. 2
- E. 1

Answer: C

19) In the formation of macromolecule what type of reaction would join two subunits together

- A. Hydrophobic reaction
- B. Hydrolysis reaction
- C. Dehydration reaction
- D. Denaturation reaction

Answer: C

20) Assuming that all of the below given compound had the same number of carbon atoms, which of the following has the most C-H bonds

- A. Unsaturated fat
- B. Poly saturated fat
- C. Polysaccharides
- D. Saturated fats

Answer: D

21) Aldose sugars and ketose sugars differ in

- A. Position of carbonyl group
- B. Number of carbonyl groups
- C. Position of carboxyl group
- D. Number of carboxyl groups

Answer: A

22) Which of the following is hydrophobic

- A. Cellulose
- B. Starch
- C. Animal fats
- D. Oils
- E. C + D

Answer: E

23) Oils are liquid at room temperature because they

- A. Are small molecules
- B. Are nonpolar
- C. Are hydrophobic
- D. Contains unsaturated fatty acid
- E. Contains saturated fatty acid

Answer: D

24) Which of the following is true:

- A. Amylose is branched molecule
- B. Amylopectin is unbranched molecule
- C. Starch contains alpha glucose in its monomer
- D. Human can digest starch
- E. Both C and D are correct

Answer: E

25) Misfolded protein involved in:

- A. Mad cow disease
- B. Parkinson's disease
- C. Cystic fibrosis
- D. Alzheimer's
- E. All of the above

Answer: E

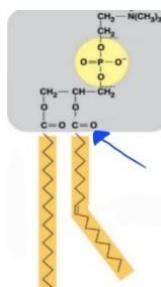
26) Which of the following is false about cellulose?

- A. It made of B-glucose
- B. It is the main component of plant cell wall
- C. Can form hydrogen bond with other parallel cellulose molecules
- D. It cannot be digested by human enzymes
- E. All of them are true

Answer: E

27) The bond is described as _____ bond

- A. Glycosidic
- B. Ester
- C. Peptide
- D. Ionic



Answer: B

28) What type of macromolecule carries out catalysis in biological systems

- A. Protein called enzymes
- B. Carbs called starches
- C. Lipids called steroids

Answer: A

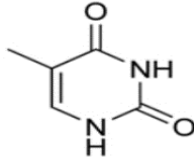
29) In a sucrose molecule, the linkage between glucose and fructose is :

- A. 1-4 glycosidic
- B. 1-2 glycosidic
- C. 1-6 glycosidic
- D. Peptide
- E. Ester

Answer: B

30) The figure represents

- A. Purine
- B. Pyrimidine
- C. Sugar
- D. Fat



Answer: B

31) Molecule with which functional group may form polymers via dehydration reactions ?

- A. hydroxyl group
- B. carbonyl group
- C. Carboxyl group
- D. Either carbonyl or carboxyl group
- E. Either carboxyl or hydroxyl group

Answer: E

32) Which of these molecules is not formed by dehydration reaction ?

- A. Fatty acid
- B. Disaccharide
- C. DNA
- D. Protein
- E. Amylose

Answer: A

33) Which of the following is true about sickle cell anemia?

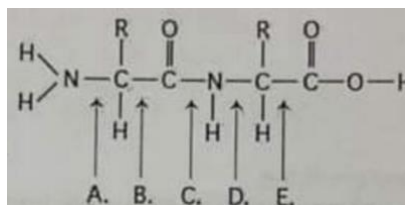
- A. It is caused by point mutation that lead to substitution of one amino acid
- B. It is involved abnormal alpha subunit
- C. Hemoglobin molecules aggregate in a long fiber
- D. Reduced capacity for oxygen transport
- E. All of them are true except of (B)

Answer: E

34) According to the figure:

Which bond is peptide bond?

- A. A
- B. B
- C. C
- D. D
- E. E



Answer: C

Which bond is closest to the amino terminus of the molecule?

- A. A
- B. B
- C. C
- D. D
- E. E

Answer: A

At which bond water needed to be added to achieve hydrolysis of the peptide

- A. A
- B. B
- C. C
- D. D
- E. E

Answer: C

35) Human sex hormone can be classified as

- A. Protein
- B. Lipid
- C. Steroids
- D. B+C
- E. A+ B

Answer: D

36) The simplest amino acid is

- A. Glycine
- B. Serine
- C. Valine
- D. Lysine

Answer: A

37) when protein lose its native shape it called:

- A. Denatured
- B. Renatured
- C. Destructed
- D. Deformed
- E. None of the above

Answer: A

38) Phospholipids contain:

- A. Glycerol
- B. 2 hydrocarbon tails
- C. Phosphate group
- D. Amino group
- E. All of them except of (D)

Answer: E

39) There are 20 different amino acids, what makes one amino acid different from another

- A. Different side chain (R group) attached to COOH group
- B. Different side chain (R group) attached to amino groups
- C. Different side chain (R group) attached to α -carbon
- D. Different asymmetric carbons

Answer: C

40) If a DNA sample were composed of 10% thymine, what would be the percentage of guanine

- A. 10
- B. 20
- C. 40
- D. 80

Answer: C

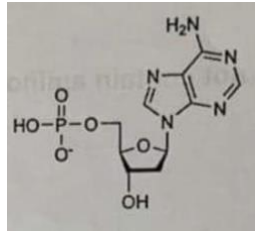
41) The molecular formula for glucose is $C_6H_{12}O_6$. What would be the molecular formula for a polymer made by linking 10 glucose by dehydration reaction (C : H : O)

- A. (60 120 60)
- B. (6 12 6)
- C. (60 102 51)
- D. (60 100 50)

Answer: C

42) The figure represents :

- A. Nucleotide
- B. Nucleoside mono phosphate
- C. Nucleoside diphosphate
- D. A+ B



Answer: D

43) Which of the following pairs of base form normal double helix of DNA

- A. 5'-AGCT-3' with 5'-TCGA-3'
- B. 5'-GCGC-3' with 5'-TATA-3'
- C. 5'-ATGC-3' with 5'-GCAT-3'
- D. All of the above are correct

Answer: C

44) The molecular formula for a polymer of 10 ribose molecules (C : H : O)

- A. 6 : 12 : 6
- B. 5 : 10 : 5
- C. 60 : 120 : 60
- D. 60 : 102 : 51
- E. 50 : 82 : 41

Answer: E

45) A saturated fatty acid contains more _____ atoms than unsaturated fatty acid

- A. Carbon
- B. Oxygen
- C. Nitrogen
- D. Phosphate
- E. Hydrogen

Answer: E

46) Which of the following molecules is a not a polysaccharide?

- A. Amylose
- B. Glycogen
- C. Cellulose
- D. Chitin
- E. Collagen

Answer: E

47) In a double-stranded DNA molecule, phosphodiester linkage consists of a phosphate group that links

- A. cytosine to guanine
- B. the sugars of two nucleotides
- C. thymine to adenine
- D. ribose to a nitrogenous base
- E. deoxyribose to a nitrogenous base

Answer: B

48) Which characteristic could be shared by the primary and tertiary structures of protein?

- A. Both could have hydrogen bonds between the repeating constituents of the polypeptide backbone
- B. Both have peptide bond between the amino acids
- C. Both are functional proteins
- D. Both could have disulfide bridge
- E. Both must contain glycerol molecule

Answer: B

49) Changing one amino acid in a protein could change

- A. its ability to function
- B. its shape
- C. its primary structure
- D. its tertiary structure
- E. all are correct

Answer: E

50) Which of the following is amphipathic?

- A. Phospholipids
- B. Cholesterol
- C. Cellulose
- D. Collagen
- E. Glycogen

Answer: A

51) Which of these classes of biological molecules consist of both small molecules and macromolecular polymers (both polymer & monomer) ?

- A. lipids
- B. carbohydrates
- C. proteins
- D. nucleic acids

Answer: B

52) The enzyme amylase can break glycosidic linkages between glucose monomers only if the monomers are the α form. Which of the following could amylase break down?

- A. glycogen
- B. cellulose
- C. chitin
- D. glycogen and chitin only
- E. glycogen, cellulose, and chitin

Answer: A

53) One of the following is an example of ketose?

- A. glyceraldehyde
- B. ribose
- C. ribulose
- D. glucose

Answer: C

54) Humans can digest starch but not cellulose because:

- A. the monomer of starch is glucose, while the monomer of cellulose is galactose
- B. humans have enzymes that can hydrolyze the β glycosidic linkages of starch but not the α Glycosidic linkages of cellulose
- C. humans have enzymes that can hydrolyze the α glycosidic linkages of starch but not the β Glycosidic linkages of cellulose
- D. humans harbor starch-digesting bacteria in the digestive tract.

Answer: C

55) Which of the following is an example of hydrolysis?

- A. the reaction of two monosaccharides, forming a disaccharide with the release of water
- B. the synthesis of two amino acids, forming a peptide with the release of water
- C. the reaction of a fat, forming glycerol and fatty acids with the release of water
- D. the reaction of a fat, forming glycerol and fatty acids with the consumption of water

Answer: D

56) Denaturation causes changes in the protein's confirmation by disrupting:

- A. Hydrogen bonds
- B. ionic bonds
- C. Hydrophobic interactions
- D. All of the options are correct
- E. Disulfide bonds

Answer: D

57) Dehydration and hydrolysis reactions involve removing or adding of – to macromolecule subunits

Select one:

- A. OH and H
- B. COOH and H
- C. C and O
- D. H and C
- E. CH and NH₂

Answer: A

58) Sickle-cell hemoglobin differs from normal hemoglobin by replacement of glutamic acid the sixth amino acid in the Alpha-chain, by valine. Select one:

- A. True
- B. False

Answer: B

59) Nucleotides contain _____ sugars, Select one:

- A. six-carbon
- B. three-carbon
- C. five-carbon
- D. seven-carbon
- E. four-carbon

Answer: C

60) Steroid hormones such as testosterone and estrogen are derived from:

- A. None of the options is correct
- B. Triacylglycerol
- C. Cholesterol
- D. Saturated fatty acids
- E. Glycolipids

Answer: C

61) For a protein to have a quaternary structure it must have four polypeptide subunits:

- A. False
- B. True

Answer: A

62) The unfolding of protein induces by heat or treatment with certain chemicals is referred to:

- A. Denaturation
- B. Renaturation
- C. Digestion
- D. Polymerization
- E. Activation

Answer: A

63) What makes a fatty acid an acid?

- A. its carboxyl group
- B. Its insolubility in water
- C. Its hydrocarbon skeleton
- D. Being a polymer
- E. its ability to form an ester bond

Answer: A

64) Which of the following is true regarding saturated fatty acids:

- A. Are the principal molecules in butter
- B. have double bonds between their carbon atoms
- C. Are liquid at room temperature
- D. All of the options are true
- E. Are the predominant fatty acids in corn oil

Answer: A

65) Both DNA and RNA have the same pentose

- A. False
- B. True

Answer: A

66) Bacterial cells are prokaryotic; in comparison to a typical eukaryotic cell they:

- A. Their organelles are small and packed together
- B. have fewer internal membranous compartments
- C. lack a plasma membrane
- D. have a smaller nucleus
- E. lack a nucleus

Answer: E

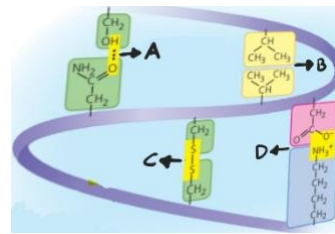
67) Triglycerides are synthesized from:

- A. A Cholesterol and glycerol
- B. fatty acids and glycerol
- C. Cholesterol and starch
- D. glycerol and amino acids
- E. Collagen and fatty acids

Answer: B

68) Van-der-waal interactions are represented in the shown figure by the letter:

- A. A
- B. B
- C. C
- D. D



Answer: B

69) Chromosomes are a complex of DNA, RNA and proteins, Select one:

- A. False
- B. True

Answer: A

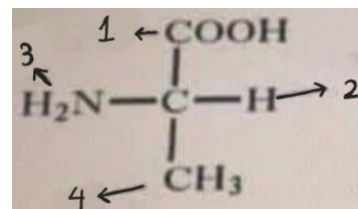
70) The structural level of a protein least affected by a disruption in hydrogen bonding is the?

- A. All are equally affected
- B. Tertiary
- C. Quaternary
- D. Primary
- E. Secondary

Answer: D

71) The diagram represents the structure of an amino acid. In this diagram, the R group is represented by number:

- A. 1
- B. 2
- C. 3
- D. 4



Answer: D

72) Which of the following are pyrimidine?

- A. Cytosine and Uracil
- B. Guanine and Cytosine
- C. Adenine and Thymine
- D. Thymine and Guanine
- E. Guanine and Adenine

Answer: A

73) Which class of biological polymers has the greatest functional variety?

- A. RNA
- B. DNA
- C. Both DNA and RNA
- D. Polysaccharides
- E. Proteins

Answer: E

74) Which of the following molecules possesses glycosidic bonds?

- A. Glycogen
- B. All are correct
- C. Cellulose
- D. Amylose
- E. Chitin

Answer: B

75) Which of the following is made of 1-4 linkage of beta glucose monomers:

- A. Glycogen
- B. Cellulose
- C. Starch
- D. Sucrose
- E. Maltose

Answer: B

76) Which of the following is a branched polysaccharide?

- A. Cellulose
- B. Amylose
- C. Glycogen
- D. Chitin
- E. None is correct

Answer: C

77) DNAase is an enzyme that breaks the covalent bonds between nucleotides. Which bonds are broken?

- A. A CH group on carbon 2 of the ribose
- B. The phosphodiester bond
- C. The glycosidic linkage
- D. All bases will be separated from the deoxyribose sugar

Answer: B

Chapter 7

1. Which of the following pairs would be separated by different configurations?

- A. Ribosomes, Mitochondria
- B. Na^+ , K^+
- C. Cl^- , H_2PO_4^-
- D. Amino Acids, glucose
- E. None of the above

Answer: A

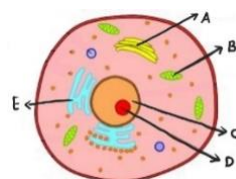
2. Viruses can be seen by

- A. Compound microscope
- B. Dissecting microscope
- C. Electron microscope
- D. Unaided eye
- E. A,B and C

Answer: C

3. Which part of the cell, indicated by letters, produces rRNA?

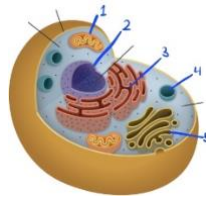
- A. A
- B. B
- C. C
- D. D
- E. E



Answer: D

4. Which organelle is responsible for the production of membrane proteins?

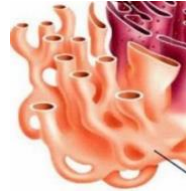
- A. 1
- B. 2
- C. 3
- D. 4
- E. 5



Answer: C

5. Structure A in the picture functions in all of the following except

- A. Carbohydrate metabolism
- B. Steroids synthesis
- C. Calcium storage
- D. Drugs detoxification
- E. Proteins sorting and packaging



Answer: E

6. The middle lamella that joins plant cells together is

- A. produced by the endoplasmic reticulum
- B. produced by the Golgi apparatus
- C. rich in sticky polysaccharides called pectin
- D. made of cellulose
- E. B & C are correct

Answer: B

7. Which of the following organelles are interconnected and made of membranous sacs called cisternae?

- A. Golgi apparatus
- B. Smooth endoplasmic reticulum
- C. Rough endoplasmic reticulum
- D. B&C
- E. All of the above

Answer: E

8. Which of the following contain the 9 + 2 arrangement of microtubules?

- A. Cilia
- B. Centrioles
- C. Flagella
- D. A and C only
- E. A, B, and C

Answer: D

9. Which of the following possesses a micro tubular structure similar to a basal body?

- A. Centrioles
- B. Lysosome
- C. Nucleolus
- D. Peroxisomes
- E. Ribosome

Answer: A

10. Which statement correctly characterizes bound ribosomes?

- A. Bound ribosomes are enclosed in their own membrane
- B. Bound and free ribosomes are structurally different
- C. Bound ribosomes generally synthesis membrane proteins and secretory proteins
- D. The most common location for bound ribosomes is the cytoplasmic surface of the plasma membrane
- E. All of the above

Answer: C

11. Tay-Sachs disease is a human genetic abnormality that results in cells accumulating and becoming clogged with very large and complex lipids. Which cellular organelle must be involved in this condition

- A. The endoplasmic reticulum
- B. The Golgi apparatus
- C. Lysosomes
- D. Mitochondria
- E. membrane-bound ribosomes

Answer: C

12. Which of the following organelles directly involved Intracellular digestion of macromolecules?

- A. contractile vacuole
- B. Lysosomes
- C. Central vacuole
- D. food vacuole

Answer: B

13. Which is one of the main energy transformers of cells?

- A. Lysosome
- B. Vacuole
- C. Mitochondrion
- D. Golgi apparatus
- E. Peroxisomes

Answer: C

14. Which of the following contains its own DNA and ribosomes?

- A. Lysosome
- B. Vacuole
- C. Mitochondrion
- D. Golgi apparatus
- E. Peroxisomes

Answer: C

15. Which plant cell organelle contains its own DNA and ribosomes?

- A. mitochondrion
- B. glyoxysome
- C. peroxisome
- D. vacuole
- E. Golgi apparatus

Answer: A

16. A cell has the following molecules and structures: enzymes, DNA, ribosomes, plasma membrane, and mitochondrion, it could be a cell from

- A. A bacterium
- B. An animal, but not a plant
- C. A plant, but not an animal
- D. A plant or an animal
- E. any kind of organism

Answer: D

17. Cyanide binds with at least one molecule involved in producing ATP. If a cell is exposed to cyanide, most of the cyanide would be found within the

- A. mitochondria
- B. Ribosomes
- C. Peroxisomes
- D. Lysosomes
- E. Endoplasmic reticulum

Answer: A

18. The liver is involved detoxification of many poisons and drugs. Which of the following structures is primarily involved in this process and therefore abundant in liver cells?

- A. Rough ER
- B. Smooth ER
- C. Golgi apparatus
- D. Nuclear envelope
- E. Transport vesicles

Answer: B

19. Which of the following produces and modifies polysaccharides that will be secreted?

- A. Lysosome
- B. Vacuole
- C. Mitochondrion
- D. Golgi apparatus
- E. Peroxisomes

Answer: D

20. Which of the following is true about free ribosomes?

- A. It is attached to the nuclear envelope
- B. It is attached to the ER
- C. They produce the proteins that must be secreted out the cell
- D. Producing cytoplasmic proteins
- E. None of the above

Answer: D

21. _____ is a framework of protein fibers extending throughout the nuclear interior

- A. Nuclear lamina
- B. Nuclear matrix
- C. Middle lamella
- D. Pore complex
- E. None of the above

Answer: B

22. For studying Phagocytosis (Lysosome function) , the best cells used to study it:

- A. Liver cells
- B. Red blood cells
- C. Macrophages
- D. Skin cell
- E. None of the above

Answer: C

23. Which of the following organelles is absent in plant cells?

- A. Plasma membrane
- B. Cell wall
- C. Chloroplast
- D. Central vacuole
- E. Centrosome

Answer: E

24. All of the following is found in prokaryotic cells except

- A. DNA
- B. Chromosomes
- C. Ribosomes
- D. Cytosol
- E. Nuclear envelope

Answer: E

25. Large number of ribosomes can be found in cells that produce:

- A. Proteins
- B. Carbohydrate
- C. Lipids
- D. DNA
- E. RNA

Answer: A

26. Which type of junctions establishes a barrier that prevents leakage of extracellular fluid across a layer of epithelial cells?

- A. Tight Junction
- B. Gap junction
- C. Desmosomes
- D. Plasmodesmata
- E. None of the above

Answer: A

27. Under which of the following conditions would you expect to find a cell with a predominance of free ribosomal?

- A. A cell that is secreting proteins
- B. A cell that is producing cytoplasmic enzymes
- C. A cell that is constructing its cell wall or extracellular matrix
- D. A cell that is digesting food particles
- E. A cell that is enlarging its vacuole

Answer: B

28. Materials from one animal cell can enter adjacent cell by :

- A. Tight Junction
- B. Gap Junction
- C. Desmosome
- D. Microfilament
- E. Intermediate filament

Answer: B

29. Microtubules are not involved in?

- A. Cilia
- B. Flagella
- C. Movement of organelles
- D. Cell division
- E. Amoeboid movement

Answer: E

30. The plant cell's central vacuole:

- A. Play a major role in growth
- B. Store nutrient
- C. Reservoir of Inorganic ions
- D. Occupied large space of the cell
- E. All of the above

Answer: E

31. The nuclear envelope is directly connect to:

- A. Endoplasmic reticulum
- B. Golgi apparatus
- C. Lysosomes
- D. Peroxisomes
- E. Food vacuole

Answer: A

32. Which of the following found in both bacteria and plant cells:

- A. Chloroplasts
- B. Cell wall
- C. Nucleus
- D. Mitochondria
- E. None of the above

Answer: B

33. The organelle that can carry out (Autophagy process) is:

- A. Golgi
- B. ER
- C. Nucleus
- D. Mitochondria
- E. Lysosomes

Answer: E

34. The correct pathway of secretory proteins:

- A. Rough ER - Lysosome - Golgi - Plasma membrane
- B. Smooth ER - Golgi - Transport vesicles - Plasma membrane
- C. Rough ER - Golgi - Transport vesicle - Plasma membrane
- D. Golgi - Lysosome - Plasma membrane
- E. None of the above

Answer: C

35. The type of junction that can be seen between heart (Cardiac muscles) is

- A. Tight junction
- B. Gap junction
- C. Desmosomes
- D. Plasmodesmata
- E. None of the above

Answer: B

36. Which of the following IS FALSE about lysosomes:

- A. Can digest food and damage organelles
- B. They are membranous
- C. Contain hydrolytic enzymes
- D. Has basic environment
- E. All of the above is true

Answer: D

37. Chloroplasts and mitochondria have in common a :

- A. Both of them bounded by double membrane
- B. Both of them contain DNA
- C. Both of them involved in energy conversion
- D. Both of them involved in digestion of food
- E. All of them true except of (D)

Answer: E

38. Microtubules control the beating of cilia and flagella which aid in cell motility in some unicellular organisms. Select one:

- A. False
- B. True

Answer: B

39. A plant cell was grown in a test tube with radioactive nucleotides, the part from which DNA is built. The radioactivity will be concentrated in the Rough ER

- A. False
- B. True

Answer: A

40. Cytochalasin D is a drug that prevents actin polymerization. A cell treated with cytochalasin D will still be able to contract muscle fibers, Select one:

- A. False
- B. True

Answer: A

41. What types of proteins are not synthesized in the rough ER? Select one:

- A. endoplasmic reticulum proteins
- B. plasma membrane proteins
- C. mitochondrial proteins
- D. extracellular matrix proteins
- E. secretion proteins

Answer: C

42. Movement of vesicles within the cell depends on what cellular structures?

- A. actin filaments and ribosomes
- B. microtubules and motor proteins
- C. actin filaments and intermediate filaments
- D. actin filaments and microtubules
- E. Centrioles and motor proteins

Answer: B

43. Motor proteins provide for molecular motion in cells by interacting with what typos of cellular structures?

- A. A ribosomes
- B. cytoskeletal structure
- C. membrane proteins
- D. cellulose fibers in the cell wall
- E. sites of energy production in cellular respiration

Answer: B

44. if an individual has abnormal microtubules, then his sperm and skeletal muscles will be affected

- A. false
- B. true

Answer: B

45. phagocytic white blood cells ate the best tor studying lysosomes.

- A. False
- B. True

Answer: B

46. The electron microscope has been particularly useful in studying bacteria because

- A. Bacteria have few organelles
- B. Electrons can pass through bacterial cell wall
- C. Bacteria move so quickly
- D. their organelles are small and packed together
- E. bacteria are so small

Answer: B

47. Intermediate filaments are involved in:

- A. Pseudopodia
- B. Spindle fibers
- C. Anchorage of the nucleus
- D. Nuclear lamina in animal cells
- E. C and D are correct

Answer: E

48. Which is common for both mitochondria and chloroplast:

- A. Both are surrounded by two membranes
- B. Both have DNA and ribosomes
- C. Both transform energy
- D. ATP is produced
- E. All of the options are correct

Answer: E

49. Microtubules are not involved in which of the following:

- A. Cilia
- B. Flagella
- C. Spindle fiber
- D. Basal body
- E. Pseudopodia

Answer: E

50. The most likely pathway taken by a newly synthesized protein that will be secreted by a cell is.

ER → Golgi → vesicles that fuse with plasma membrane

- A. False
- B. True

Answer: B

51. The maximum magnification in the light microscope is 1000 times:

- A. False
- B. True

Answer: B

Chapter 8

1. Cell membranes are made up of a mosaic of:

- A. Phospholipids and proteins
- B. Cellulose and proteins
- C. Starch and proteins
- D. Nucleic acid and proteins
- E. Only phospholipids

Answer: A

2. What are the membrane structures that function in active transport?

- A. Peripheral proteins
- B. Carbohydrates
- C. Receptor proteins
- D. Carrier proteins
- E. All of the above

Answer: D

3. Facilitated diffusion:

- A. Requires either channel or carrier proteins
- B. Occur down a concentration gradient
- C. Require the hydrolysis of ATP
- D. Occur in all cells
- E. All of the above are correct except C

Answer: E

4. Which of the following is an electrogenic pump?

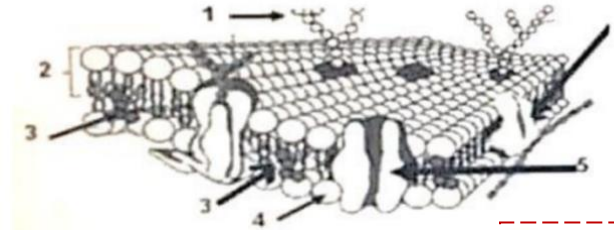
- A. Na⁺-K⁺ pump
- B. Glucose carrier
- C. H⁺ pump
- D. All of the above
- E. Only A and C

Answer: E

5. Which structure:

➤ Can function as aquaporin?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5



Answer: E

➤ Can be ABO blood group marker?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

Answer: A

6. Lipid soluble (hydrophobic) small molecules like CO₂ and O₂ enter the cell by

- A. Diffusion through channel protein
- B. Diffusion through the lipid bilayer
- C. Osmosis
- D. Active transport
- E. Bulk transport

Answer: B

7. The role of cholesterol on the membrane fluidity of animal cells is to:

- A. Restrain (limits) movement of phospholipids at high temperature
- B. Prevent tight packing of phospholipids at low temperature
- C. Restrains movement of proteins at low temperature
- D. Preventing tight packing of proteins at high temperature
- E. A and B

Answer: E

8. In order for a protein to be an integral membrane protein it would have to be:

- A. Hydrophilic
- B. Hydrophobic
- C. Amphipathic, with at least one hydrophobic region
- D. Completely covered with phospholipids
- E. Exposed on only one surface of the membrane

Answer: C

9. Which of the following is true of integral membrane proteins?

- A. They lack tertiary structure
- B. They are loosely bound to the surface of the bilayer
- C. They are usually transmembrane proteins
- D. They are not mobile within the bilayer
- E. They serve only a structural role in membranes

Answer: C

10. The primary function of polysaccharides attached to the glycoproteins and glycolipids of animal cell membranes is

- A. To facilitate diffusion of molecules down their concentration gradients
- B. To actively transport molecules against their concentration gradients
- C. To maintain the integrity of a fluid mosaic membrane
- D. To maintain membrane fluidity at low temperatures
- E. To mediate cell-to-cell recognition

Answer: E

11. Which of the following statements correctly describes the normal tonicity conditions for typical plant and animal cells?

- A. The animal cell is in a hypotonic solution, and the plant cell is in an isotonic solution
- B. The animal cell is in an isotonic solution, and the plant cell is in a hypertonic solution
- C. The animal cell is in a hypertonic solution, and the plant cell is in an isotonic solution
- D. The animal cell is in an isotonic solution, and the plant cell is in a hypotonic solution
- E. The animal cell is in a hypertonic solution, and the plant cell is in a hypotonic solution

Answer: D

12. Which of the following functions of membrane proteins involves surface carbohydrate?

- A. Cell-cell recognition
- B. Enzymatic activity
- C. Transport
- D. Tight junctions
- E. None of the above

Answer: A

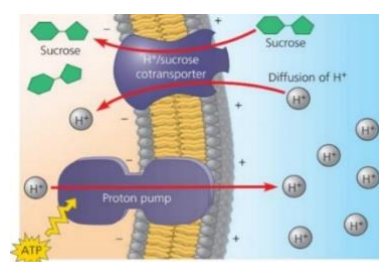
13. What kinds of molecules pass through a cell membrane most easily?

- A. Large and hydrophobic
- B. Small and hydrophobic
- C. Large polar
- D. Ionic
- E. Monosaccharides such as glucose

Answer: B

14. In the figure shown, a proton passes to the cytosol:

- A. Down its concentration gradient
- B. By simple diffusion
- C. Against its concentration gradient
- D. Down its electrochemical gradient
- E. None of the above



Answer: D

15. What is the voltage across a membrane called:

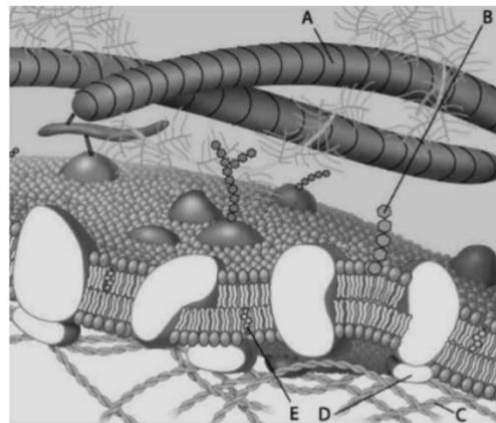
- A. Water potential
- B. Chemical gradient
- C. Membrane potential
- D. Osmotic potential
- E. Electrochemical gradient

Answer: C

16. According to the figure below, answer the following questions:

➤ Which component is the peripheral protein?

- A. A
- B. B
- C. C
- D. D
- E. E



Answer: D

➤ Which component is cholesterol?

- A. A
- B. B
- C. C
- D. D
- E. E

Answer: E

➤ Which component is a glycolipid?

- A. A
- B. B
- C. C
- D. D
- E. E

Answer: B

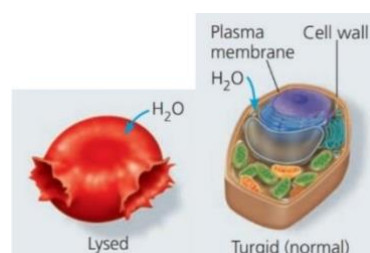
17. Which of the following is involved in engulfing of droplets contains dissolved materials?

- A. Phagocytosis
- B. Pinocytosis
- C. Receptor mediated endocytosis
- D. Exocytosis
- E. Facilitated diffusion

Answer: B

18. These cells can be found in:

- A. Hypertonic solution
- B. Hypotonic solution
- C. Isotonic solution
- D. None of the above
- E. All of the above



Answer: B

19. "Co-transport" is:

- A. Coupling of uphill to a downhill one
- B. Using of ATP to transport materials against their concentration
- C. Using of ATP to transport materials down their concentration
- D. "Proton-sucrose" co-transporter is an example for this process
- E. Both A and D are correct

Answer: E

20. Water enters and leaves plant and animal cells by:

- A. Pinocytosis
- B. Simple diffusion
- C. Osmosis
- D. Co-transport
- E. Bulk transport

Answer: C

21. Low density lipoproteins (LDL) enter cells by:

- A. Pinocytosis
- B. Phagocytosis
- C. Active transport
- D. Receptor mediated endocytosis
- E. Passive transport

Answer: D

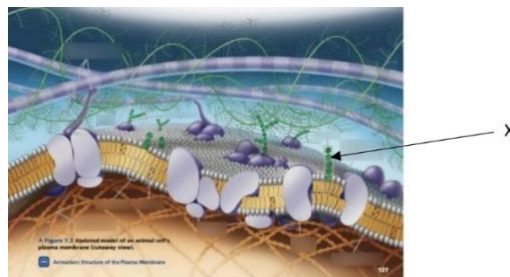
22. Channel proteins are required for:

- A. Osmosis
- B. Facilitated diffusion
- C. Active transport
- D. Phagocytosis
- E. A and B are correct

Answer: B

23. The part pointed at (X) in the figure represents

- A. Carbohydrate
- B. Cholesterol
- C. Phospholipid
- D. Collagen fiber
- E. Fatty acid



Answer: A

24. Which of the following is involved in the Na⁺ passive transport across plasma membrane?

- A. ATP
- B. Electrical membrane potential (electrical force)
- C. Gated channel proteins
- D. Na⁺ concentration gradient (chemical force)
- E. B and D are correct

Answer: E

25. One of the functions of cholesterol in animal cell membrane is to:

- A. Store energy
- B. Maintain membrane fluidity
- C. Speed diffusion
- D. Phosphorylate ADP
- E. None of the above

Answer: B

26. What mechanisms do plants use to transport sucrose produced by photosynthesis into specialized cells in leaves against its concentration gradient?

- A. Diffusion
- B. Sucrose pumping
- C. Cotransport
- D. Receptor mediated endocytosis
- E. Phagocytosis

Answer: C

27. The sodium-potassium pump

- A. Moves sodium ions into the cell and potassium ions out of the cell
- B. Is an electrogenic pump
- C. Moves sodium and potassium ions into the cell
- D. Moves sodium and potassium ions along their electrochemical gradients
- E. All of the above

Answer: B

28. The process that molecules move into cells via vesicles is

- A. Co-transport
- B. Facilitated diffusion
- C. Endocytosis
- D. Secretion
- E. None of the above

Answer: C

29. Cell membranes are asymmetrical. Which of the following is a most likely explanation?

- A. The “innerness” and “outerness” of membrane surfaces are predetermined by bound ribosomes
- B. Proteins can only span cell membranes if they are hydrophobic
- C. Cell membranes communicate signals from one organism to another
- D. Cell membrane proteins are determined as the membrane is being packaged in the ER and Golgi
- E. Cell membrane orientation is determined by free ribosomes

Answer: D

30. The extracellular matrix is thought to participate in the regulation of animal cell behavior by communicating information from the outside to the inside of the cell via integrins:

- A. True
- B. False

Answer: A

31. Osmosis refers to

- A. the movement of water molecules across a selectively permeable membrane
- B. the diffusion of hydrophobic molecules across a selectively permeable Membrane
- C. the diffusion of any material across a selectively permeable membrane
- D. a type of active transport
- E. the movement of water molecules across the cell wall of plant cells

Answer: A

32. Which of the following could generates voltage across cell membrane?

- A. Na⁺/K⁺ pumps
- B. H⁺/Sucrose cotransporter
- C. H⁺ pumps
- D. Aquaporins
- E. A and C

Answer: E

33. Which of the following statements is correct about aquaporins?

- A. Are membrane carrier protein
- B. Composed only of non-polar amino acids
- C. Facilitated the passage of hydrophobic molecules across cell membrane
- D. Are mainly found in the cytosol
- E. Facilitated the passage of water molecules across cell membrane

Answer: E

34. ECM proteins are made by ribosomes associated with rough ER

- A. False
- B. True

Answer: B

35. Cytoplasmic connection(s) between adjacent eukaryotic cells occur(s) through:

- A. gap junctions
- B. Plasmodesmata
- C. Desmosomes
- D. tight junctions
- E. either plasmodesmata or gap junctions

Answer: E

36. Which of the following processes in the cell uses transport proteins?

- A. Pinocytosis
- B. Exocytosis
- C. Simple diffusion
- D. All of the options
- E. Cotransport

Answer: E

37. Molecules that can diffuse across a membrane include:

- A. small polar molecules
- B. Lipoproteins
- C. Proteins
- D. small nonpolar molecules

Answer: D

38. Which of the following statements about cotransport across a membrane is correct?

- A. In cotransport, both solutes that are being transported are moving down their chemical gradients.
- B. Cotransport involves the hydrolysis of ATP by the transporting protein
- C. The sodium- potassium pump is an example of a cotransport protein
- D. A cotransport protein is most commonly an ion channel
- E. Cotransport proteins allow an ATP-powered pump to drive the active transport of a solutes

Answer: E

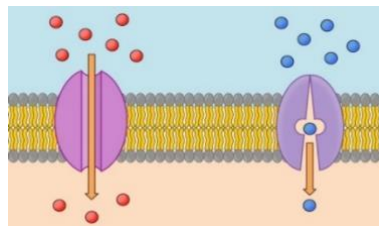
39. When a plant cell such as one from a peony stem, is submerged in a vary hypotonic solution, what is likely to occur?

- A. The cell membrane will lyse
- B. The cell will become flaccid
- C. The cell will burst
- D. The cell will become turgid
- E. Plasmolysis will shrink the interior

Answer: D

40. The figure shows ...

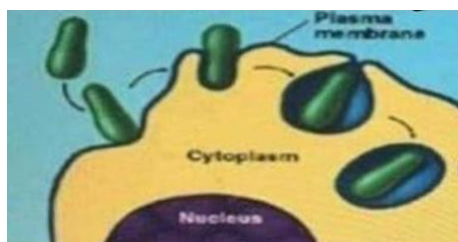
- A. Co-transport
- B. Osmosis
- C. Ion pumping
- D. Facilitated diffusion
- E. Phagocytosis



Answer: D

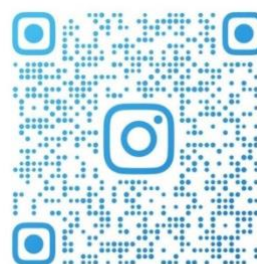
41. The process in the figure demonstrates?

- A. Pinocytosis
- B. Phagocytosis
- C. receptor-mediated
- D. photosynthesis
- E. Contractile vacuole



Answer: B

Follow me



DRAMQ02

Second Material

Chapter 6

1. A negative delta G for a chemical processes indicates:

- A. the reaction is exergonic
- B. the products of the chemical process store less energy than the reactants
- C. the reaction can happen spontaneously
- D. the reaction can proceed without an input of energy
- E. all of the above is correct

Answer: E

2. In a spontaneous change:

- A. The free energy of a system decrease
- B. The system becomes move stable
- C. The released free energy can be harnessed to do work
- D. Always move toward equilibrium
- E. All above are correct

Answer: E

3. In Exergonic reactions, energy is

- A. transformed into light
- B. used
- C. either released or used
- D. transformed into heat
- E. released

Answer: E

4. Enzymes catalyze chemical reactions by...

- A. adding heat to the system
- B. reacting with substrate to form new products
- C. increasing activation energy
- D. decreasing activation energy
- E. decreasing free energy

Answer: D

5. The active site of an enzyme is the region that..

- A. Binds to a noncompetitive inhibitor
- B. Binds to an allosteric inhibitor
- C. Binds to an allosteric activator
- D. Binds to a heme group
- E. Binds to substrate(s)

Answer: E

6. catabolic pathways...

- A. Provide the cell with energy, primarily in the form of ATP to work
- B. Are endergonic
- C. Combine molecules into more energy-rich molecules
- D. Are non-spontaneous
- E. Don't need enzyme catalyst

Answer: A

7. Which of the followings is FALSE about exergonic reactions?

- A. They are spontaneous
- B. They are energy releasing
- C. They have negative delta G
- D. They are mostly catabolic
- E. The products have higher total energy than reactants

Answer: E

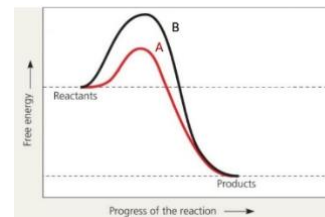
8. Coenzymes are usually...

- A. inorganic cofactors
- B. Organic cofactors
- C. Vitamins
- D. allosteric regulators
- E. both B and C are correct

Answer: E

9. Which of the following represents an un-catalyzed reaction?

- A. A
- B. B



Answer: B

10. The minimum amount of energy needed for a reaction is known as:

- A. Entropy
- B. Activation energy
- C. endothermic level
- D. Equilibrium point
- E. Free energy

Answer: B

11. Which of the following is not a product of hydrolysis of ATP?

- A. ADP
- B. Energy
- C. Pi (inorganic phosphate)
- D. Amino acids
- E. ADP and Pi

Answer: D

12. Reactant capable of interacting to form products in a chemical reaction must first overcome a thermodynamic barrier known as the reaction's:

- A. Entropy
- B. Activation energy
- C. Endothermic level
- D. Equilibrium point
- E. Free energy

Answer: B

13. The transfer of free energy from exergonic path ways to endergonic pathways is best called:

- A. Feedback inhibition
- B. ATP cycle
- C. Energy coupling
- D. Cooperatively
- E. None of the above

Answer: C

14. Which of the following is (are) true for anabolic pathways?

- A. They do not depend on enzymes
- B. They are usually highly spontaneous chemical reactions
- C. They consume energy to build up polymers from monomers
- D. They release energy as they degrade polymers to monomers
- E. They consume energy to decrease the entropy of the organism and its environment

Answer: C

15. Which term most precisely describes the cellular process of breaking down large molecules into smaller ones?

- A. Catalysis
- B. Metabolism
- C. Anabolism
- D. Dehydration
- E. Catabolism

Answer: E

16. Some bacteria are metabolically active in hot springs because:

- A. They are able to maintain a lower internal temperature
- B. High temperatures make catalysis unnecessary
- C. Their enzymes have high optimal temperatures
- D. Their enzymes are completely insensitive to temperature
- E. They use molecules other than proteins or RNAs as their main catalysts

Answer: C

17. Increasing the substrate concentration in an enzymatic reaction could overcome which of the following?

- A. Denaturization of the enzyme
- B. Allosteric inhibition
- C. Competitive inhibition
- D. Saturation of the enzyme activity
- E. Insufficient cofactors

Answer: C

18. The enzyme can speed the chemical reaction by:

- A. Speeding the movement of molecules
- B. Lowering the activation energy
- C. Increasing the number of substrate molecules
- D. All of the above
- E. None of the above

Answer: B

19. Why is ATP an important molecule in metabolism?

- A. Its hydrolysis provides an input of free energy for exergonic reactions.
- B. It provides energy coupling between exergonic and endergonic reactions
- C. Its terminal phosphate group contains a strong covalent bond that, when hydrolyzed, releases free energy.
- D. Its terminal phosphate bond has higher energy than the other two.
- E. It is one of the four building blocks for DNA synthesis

Answer: B

20. Which of the following is most similar in structure to ATP?

- A. A pentose sugar
- B. ADNA nucleotide
- C. An RNA nucleotide
- D. An amino acid with three phosphate groups attached
- E. A phospholipid

Answer: C

21. How does a non-competitive inhibitor decrease the rate of an enzyme reaction?

- A. By binding at the active site of the enzyme
- B. By changing the shape of the enzyme's active site
- C. By changing the free energy change of the reaction
- D. By acting as a coenzyme for the reaction
- E. By decreasing the activation energy of the reaction

Answer: B

22. The mechanism in which the end product of a metabolic path way inhibits an earlier step in the pathway is most precisely described as:

- A. Metabolic inhibition
- B. Feedback inhibition
- C. Allosteric inhibition
- D. Non-cooperative inhibition
- E. Reversible inhibition

Answer: B

23. In the cell, coupling reactions need the use of:

- A. Amino acids
- B. Light
- C. Sugars
- D. Fatty acids
- E. ATP

Answer: E

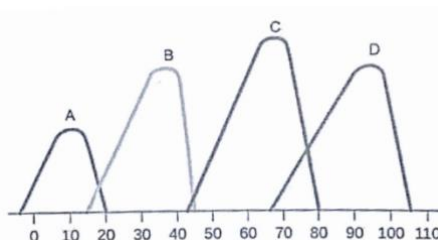
24. If an enzyme is added to a solution where its substrate and product are in equilibrium, what will occur?

- A. Additional product will be formed
- B. Additional substrate will be formed
- C. The reaction will change from endergonic to exergonic
- D. The free energy of the system will change
- E. Nothing; the reaction will stay at equilibrium

Answer: E

25. Which of the following curves represent optimal temperature of a human enzyme?

- A. A
- B. B
- C. C
- D. D
- E. None of the above



Answer: B

26. During a laboratory experiment, you discover that an enzyme-catalyzed reaction has a Delta G of -20 kcal/mol. If you double the amount of enzyme in the reaction, what will be the Delta G for the new reaction?

- A. 40 kcal/mol
- B. -20 kcal/mol
- C. 0 kcal/mol
- D. +20 kcal/mol
- E. +40 kcal/mol

Answer: B

27. Induced fit results from binding of _____ to an enzyme

- A. Vitamins
- B. Non-competitive inhibitor
- C. Specific substrate molecule
- D. b and c
- E. None of the above

Answer: C

28. If an enzyme in solution is saturated with substrate, the most effective way to obtain a faster yield of products is to:

- A. Add more of the enzyme
- B. Heat the solution to 90C
- C. Add more substrate
- D. Add an allosteric inhibitor
- E. Add a noncompetitive inhibitor

Answer: A

29. Allosteric inhibitors act as:

- A. Competitive inhibitors
- B. Coenzymes
- C. Non-competitive inhibitors
- D. Cofactors
- E. Either competitive or non-competitive inhibitors

Answer: C

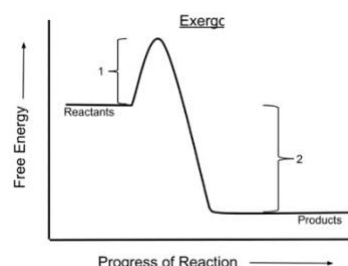
30. Allosteric enzyme regulation is usually associated with:

- A. Lack of cooperatively
- B. Feedback inhibition
- C. Activating activity
- D. An enzyme with more than one subunit
- E. The need for cofactors

Answer: D

31. This reaction could be an

- A. Endergonic
- B. Exergonic

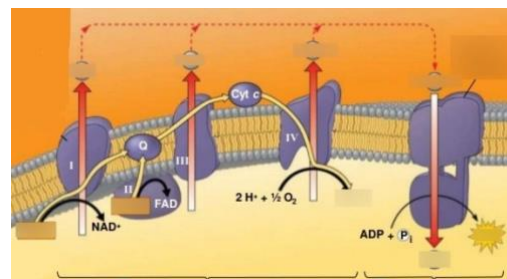


Answer: B

Chapter 10

32. The figure shows:

- A. Chemiosmosis
- B. Substrate level phosphorylation
- C. Electrochemical gradient
- D. Oxidative phosphorylation
- E. Electron transport chain creating a proton motive force



Answer: D

33. What is correct about the electron transport chain in anaerobic respiration?

- A. Can use oxygen as a final electron acceptor
- B. Occurs in aerobic bacteria
- C. Occurs in some prokaryotes
- D. It is the fermentation of glucose
- E. B and C are correct

Answer: C

34. Which of the following statements describes the results of this reaction?



- A. C₆H₁₂O₆ is oxidized and O₂ is reduced
- B. O₂ is oxidized and H₂O is reduced
- C. CO₂ is reduced and O₂ is oxidized
- D. C₆H₁₂O₆ is reduced and CO₂ is oxidized
- E. O₂ is reduced and CO₂ is oxidized

Answer: A

35. In alcohol fermentation, NAD⁺ is regenerated from NADH by:

- A. Reduction of acetaldehyde into ethanol
- B. Oxidation of pyruvate to acetyl CoA
- C. Reduction of pyruvate to lactate
- D. Oxidation of ethanol to acetyl CoA
- E. Reduction of ethanol to pyruvate

Answer: A

36. What is the purpose of beta oxidation?

- A. Breaking down of glucose into 2 pyruvate molecules
- B. Breaking down of fatty acids into two carbon fragments
- C. Converting of glucose to fatty acid
- D. Converting of fatty acid to protein
- E. None of the above

Answer: B

37. In cellular respiration, energy flows in the sequence:

- A. Glucose - NAD⁺ - electron transport chain - ATP
- B. Glucose - NADH - electron transport chain - proton motive force - ATP
- C. Glucose - NADH - electron transport chain - O₂
- D. NADH - glucose - pyruvate - Krebs cycle - H₂O
- E. Pyruvate - Acetyl CoA - Flavoprotein - ADP

Answer: B

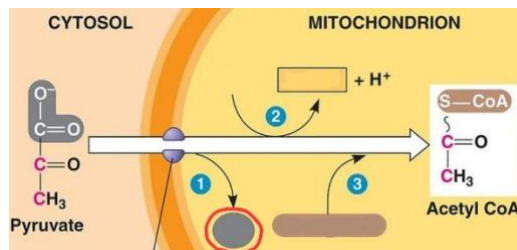
38. Which of the following statements correctly describes the activity of Phosphofructokinase?

- A. It is inhibited by AMP
- B. It is activated by ATP
- C. it is activated by Citrate
- D. It catalyzes the conversion of fructose into fructose 6-phosphate
- E. It is inhibited by citrate

Answer: E

39. Upon oxidation of pyruvate to acetyl CoA, the product compound No 1 in the red circle :

- A. NADH
- B. Coenzyme A
- C. Acetate
- D. acetyl coenzyme A
- E. carbon dioxide



Answer: E

40. In addition to ATP, what are the end products of glycolysis?

- A. CO_2 and H_2O
- B. CO_2 and pyruvate
- C. H_2O , NADH and pyruvate
- D. CO_2 and NADH
- E. H_2O , FADH_2 and citrate

Answer: C

41. Carbon dioxide (CO_2) is released during which of the following stages of cellular respiration?

- A. Glycolysis and the oxidation of pyruvate to acetyl CoA
- B. Oxidation of pyruvate to acetyl CoA and the citric acid cycle
- C. The citric acid cycle and oxidative phosphorylation
- D. Oxidative phosphorylation and fermentation
- E. Fermentation and glycolysis

Answer: B

42. Almost all of the oxygen (O_2) consumed in breathing is converted to:

- A. acetyl-CoA
- B. water
- C. Carbon dioxide (CO_2)
- D. ATP and NADH
- E. Pyruvate

Answer: B

43. The starting molecule in the citric acid cycle that reacts with Acetyl CoA and is regenerated at the end of the cycle:

- A. Succinate
- B. Fumarate
- C. Alpha-ketoglutarate
- D. Oxaloacetate
- E. Pyruvate

Answer: D

44. During aerobic respiration Which of the following directly donates electrons to the electron transport chain at the lowest energy level?

- A. ATP
- B. NADH
- C. ADP + Pi
- D. FADH₂
- E. FADH

Answer: D

45. The reactions of Fermentation function to regenerate molecules to be used in glycolysis

- A. NAD⁺
- B. ATP
- C. Pyruvic acid
- D. NADH
- E. Glucose

Answer: A

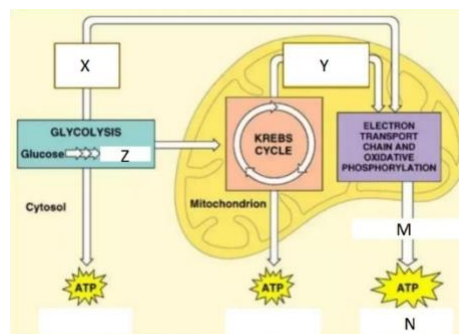
46. In cellular respiration , 90 percent of ATP is produced by...

- A. glycolysis
- B. oxidative phosphorylation
- C. Photophosphorylation
- D. Substrate -level phosphorylation
- E. Pyruvate oxidation

Answer: B

47. In the figure, the product Z is:

- A. 3 acetyl CoA molecules
- B. 2 pyruvate molecules
- C. 3 oxaloacetate molecules
- D. Citrate
- E. Fructose biphosphate



Answer: B

48. Where does glycolysis take place in eukaryotic cells?

- A. Mitochondrial matrix
- B. Mitochondrial outer membrane
- C. Mitochondrial inner membrane
- D. Mitochondrial intermembrane space
- E. Cytosol

Answer: E

49. The primary role of SO₄ ions in anaerobic cellular respiration is to:

- A. Combine with carbon, forming CO₂
- B. Yield energy in the form of ATP as it is passed down the chain
- C. Act as a final acceptor for electrons and hydrogen
- D. Combine with lactate, forming pyruvate
- E. Combine with pyruvate, forming alcohol

Answer: C

50. Production of ATP direct transfer of phosphate group from an organic substrate to ADP by enzymes is called:

- A. Oxidative phosphorylation
- B. Substrate-level phosphorylation
- C. Photophosphorylation
- D. B-Oxidation
- E. Deamination

Answer: B

51. Which of the following is true about (Phosphofructokinase enzyme)?

- A. It is the "Pacemaker" of cellular respiration
- B. It is inhibited by Citrate
- C. It is inhibited by ATP
- D. It is stimulated by AMP
- E. All of the above are correct

Answer: E

52. In electron transport chain, NADH passes its electrons to:

- A. Ubiquinone (Q)
- B. Cytochrome c
- C. Cytochrome a₃
- D. Flavin mononucleotide (FMN)
- E. Cytochrome a

Answer: D

53. Which metabolic pathway is common to both fermentation and cellular respiration of a glucose molecule?

- A. The citric acid cycle
- B. The electron transport chain
- C. Glycolysis
- D. Synthesis of acetyl CoA from pyruvate
- E. Reduction of pyruvate to lactate

Answer: C

54. Where is ATP synthase located in the mitochondrion?

- A. Cytosol
- B. Electron transport chain
- C. Outer membrane
- D. Inner membrane
- E. Mitochondrial matrix

Answer: D

55. In liver cells, the inner mitochondrial membranes are about five times the area of the outer mitochondrial membranes, what purpose must this serve?

- A. It allows for an increased rate of glycolysis
- B. It increases the surface for substrate-level phosphorylation
- C. It allows for an increased rate of the citric acid cycle
- D. It increases the surface for oxidative phosphorylation
- E. It increases the area for glycogen storage

Answer: D

56. When a molecule of NAD⁺ (nicotinamide adenine dinucleotide) gains a hydrogen atom, the molecule becomes:

- A. Dehydrogenated
- B. Oxidized
- C. Reduced
- D. Redoxed
- E. Hydrolyzed

Answer: C

57. When a glucose molecule loses a hydrogen atom as the result of an oxidation-reduction reaction, the molecule becomes:

- A. Hydrolyzed
- B. Hydrogenated
- C. Oxidized
- D. Reduced
- E. An oxidizing agent

Answer: C

58. Energy released by the electron transport chain is used to pump H⁺ into which location in eukaryotic cells?

- A. Cytosol
- B. Mitochondrial outer membrane
- C. Mitochondrial inner membrane
- D. Mitochondrial intermembrane space
- E. Mitochondrial matrix

Answer: D

59. How does pyruvate enter the mitochondrion?

- A. Active transport
- B. Diffusion
- C. Facilitated diffusion
- D. Through a channel
- E. Through a pore

Answer: A

60. The number of NADH molecules produced from oxidation of one pyruvate to acetyl CoA and further oxidation in Krebs cycle is:

- A. 3 NADH
- B. 6 NADH
- C. 4 NADH
- D. 8 NADH
- E. None of the above

Answer: C

61. In glycolysis, for each molecule of glucose oxidized to pyruvate:

- A. Two molecules of ATP are used, and two molecules of ATP are produced
- B. Two molecules of ATP are used, and four molecules of ATP are produced
- C. Four molecules of ATP are used, and two molecules of ATP are produced
- D. Two molecules of ATP are used, and six molecules of ATP are produced
- E. Six molecules of ATP are used, and six molecules of ATP are produced

Answer: B

62. The molecule that directly passes electrons to oxygen in the electron transport chain in mitochondria is:

- A. Flavoprotein
- B. CoQ (Ubiquinone)
- C. Cytochrome C
- D. Cytochrome a₃
- E. Iron sulphur protein

Answer: D

63. Which of the following factors control the cellular respiration?

- A. Intracellular ATP amount
- B. Intracellular AMP amount
- C. Citrate amount
- D. Only a and b
- E. All of the above

Answer: E

64. Before amino acids can enter into glycolysis and TCA cycle, their amino group must be removed by a process called:

- A. Decarboxylation
- B. Dehydrogenation
- C. Carboxylation
- D. Deamination
- E. Immunization

Answer: D

65. Carbohydrates and fats are considered high energy food because:

- A. They have a lot of oxygen atoms
- B. They have no nitrogen in their makeup
- C. They can have short carbon skeletons
- D. They have a lot of electrons associated with hydrogen
- E. They are easily reduced

Answer: D

66. How many electrons are needed to pass the electron transport chain of the mitochondria for the formation of one molecule of water?

- A. 1
- B. 2
- C. 4
- D. 6
- E. 2 from NADH and 1 from FADH₂

Answer: B

67. Which process in eukaryotic cells will proceed normally whether oxygen (O₂) is present or absent?

- A. Electron transport
- B. Glycolysis
- C. The citric acid cycle
- D. Oxidative phosphorylation
- E. Chemiosmosis

Answer: B

68. The energy responsible for ATP production during cellular respiration:

- A. Heat energy
- B. Light energy
- C. Food
- D. Proton motive force
- E. None of the above

Answer: D

69. Chemiosmosis ATP synthesis (oxidative phosphorylation) occurs in:

- A. All respiring cells, both prokaryotic and eukaryotic, using oxygen or other electron acceptors
- B. All cells, but only in the presence of oxygen
- C. Only in mitochondria, using either oxygen or other electron acceptors
- D. Only in eukaryotic cells, in the presence of oxygen
- E. Only in prokaryotic cells, in absence of oxygen

Answer: A

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Final material

Chapter 11

1. The part of chlorophyll molecule which absorbs light is:

- A. Porphyrin ring
- B. Hydrocarbon tail
- C. Mg atom
- D. A and B
- E. None of the above

Answer: A

2. Organisms capable of carrying out photosynthesis are described as:

- A. Phototroph
- B. Heterotroph
- C. Chemotrophic
- D. Decomposer
- E. Parasitic

Answer: A

3. The correct sequential flow of electrons from PSI to PSII is:

- A. PSII – Pq – Cytochrome – Pc – PSI
- B. Pq – PSII – Cytochrome – PSI – Pc
- C. Pc – PSII – Cytochrome – PSI – Pq
- D. PSI – Pq – Cytochrome – Pc – PSII
- E. PSI – Pc – Cytochrome – Pq – PSII

Answer: A

4. Which of the following is the ultimate source of the carbon in the sugar produced during Calvin cycle?

- A. CO₂
- B. Water
- C. ATP
- D. NADPH
- E. all of the above

Answer: A

5. Which of the following does not occur during the Calvin cycle?

- A. Carbon fixation
- B. oxidation of NADPH
- C. release of oxygen
- D. regeneration of the CO₂ acceptor
- E. consumption of ATP

Answer: C

6. Which of the following is/are used in the reduction phase of the Calvin cycle?

- A. CO₂
- B. RuBP
- C. ATP
- D. NADPH
- E. ATP and NADPH

Answer: E

7. What catalyses the carbon fixation phase of the Calvin cycle?

- A. P700
- B. Kinase
- C. Rubisco
- D. ATP synthase
- E. Regenerase

Answer: C

8. The CO₂ acceptor in Calvin cycle is:

- A. RuBP
- B. Rubisco
- C. Oxaloacetate
- D. Carbon monoxide
- E. None of the above

Answer: A

9. In the cyclic electron flow during photosystem:

- A. No NADPH is produced
- B. No O₂ is produced
- C. Only ATP is produced
- D. Both NADPH and ATP are produced
- E. A, B and C are correct

Answer: E

10. If thylakoid membrane became leaky to H⁺, which of the following processes will be affected most?

- A. Absorption of photons
- B. Linear electron flow
- C. Cyclic electron flow
- D. The synthesis of ATP
- E. Splitting of water molecules

Answer: D

11. The electrons lost from the reaction center pigment of PS II are replaced by electrons from:

- A. ATP
- B. CO₂
- C. H₂O
- D. NADPH
- E. P700

Answer: C

12. In photosynthesis in plants, the transfer of electrons through electron transport chain provides energy to:

- A. Pump protons across intermembrane space
- B. Pump protons across thylakoid membrane
- C. Pump protons into the stroma
- D. Pump protons into the matrix
- E. None of the above

Answer: B

13. When water splits in the process of photosynthesis, what it does supply to oxidize P680:

- A. Electrons
- B. Hydrogen ion
- C. Carbon dioxide
- D. Oxygen
- E. ATP

Answer: A

14. Synthesis of one molecule of G3P needs:

- A. 9 NADPH molecules
- B. 9 NADPH and 6 ATP
- C. 6 NADPH and 9 ATP
- D. Fixation of 3 CO₂ molecules, 6 NADPH, 9 ATP
- E. Fixation of 3 CO₂ molecules, 9 NADPH, 6 ATP

Answer: D

15. Which of the following is the BEST lights used for photosynthesis?

- A. Green and red
- B. Red and violet - blue
- C. Green and violet blue
- D. Red and yellow
- E. Orange and yellow

Answer: B

16. In the light reactions in photosynthesis, the final acceptor of both electrons and protons is:

- A. NAD⁺
- B. NADP⁺
- C. The primary electron acceptor
- D. B and C
- E. Either A or B

Answer: B

17. What are the products of linear photophosphorylation?

- A. Heat and fluorescence
- B. ATP and P700
- C. ATP and NADPH
- D. ADP and NADP
- E. P700 and P680

Answer: C

18. In photosynthesis, the chemiosmosis production of ATP:

- A. Is done by Calvin cycle
- B. Require the input of NADPH
- C. Is typically similar to ATP production of ATP in mitochondria
- D. A and B
- E. None of the above

Answer: C

19. An overall result of photosynthesis in plants is the use of electrons from water to reduce:

- A. Glucose
- B. Carbon dioxide
- C. Oxygen
- D. Chlorophyll
- E. NADPH

Answer: B

20. In mechanism, photophosphorylation is most similar to

- A. Substrate - level phosphorylation in glycolysis
- B. Oxidative phosphorylation in cellular respiration
- C. The Calvin cycle
- D. Carbon fixation
- E. Reduction of NADP

Answer: B

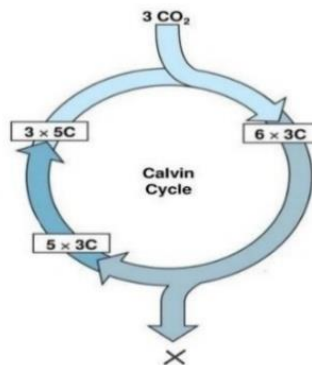
21. Generation of proton gradients across membranes occurs during:

- A. Photosynthesis
- B. Respiration
- C. Both photosynthesis and respiration
- D. Neither photosynthesis nor respiration
- E. Photorespiration

Answer: C

22. The letter X represents

- A. G3P
- B. RuBP
- C. glucose
- D. Oxaloacetate
- E. None of the above



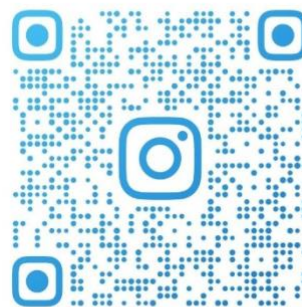
Answer: A

23. Where does the Calvin cycle take place?

- A. Stroma of the chloroplast
- B. Thylakoid membrane
- C. Cytoplasm surrounding the chloroplast
- D. Chlorophyll molecule
- E. Outer membrane of the chloroplast

Answer: A

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Chapter 16

24. Griffith experiments on R and S types of streptococcus pneumonia emphasized the concept of:

- A. Transformation
- B. Translation
- C. Transcription
- D. Replication
- E. Regeneration

Answer: A

25. The radioactive isotope P32 labels the T2 phage's:

- A. DNA
- B. Tails
- C. Proteins
- D. Heat
- E. Base plate

Answer: A

26. Who demonstrated that DNA is genetic material in T2 phage?

- A. Franklin
- B. Watson and crick
- C. Hershey and chase
- D. Chargaff

Answer: C

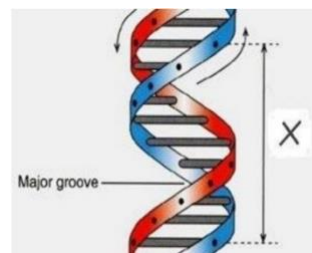
27. The scientists who demonstrated the double helix of DNA is:

- A. Franklin
- B. Watson and crick
- C. Hershey and chase
- D. Chargaff

Answer: B

28. How many base pairs exist in the distance represented by letter (X)?

- A. 10
- B. 5
- C. 8
- D. 12
- E. 14



Answer: A

29. What kind of chemical bond is found between paired bases of the DNA double helix?

- A. Hydrogen
- B. Ionic
- C. Covalent
- D. Sulfhydryl
- E. Phosphodiester

Answer: A

30. Multiple origins of replication on the DNA molecule of eukaryotic cell serve to:

- A. Removes errors in DNA replication
- B. Creates multiple copies of the DNA molecule at the same time
- C. Assures the correct orientation of the two strands in the newly growing double helix
- D. Shortens the time necessary for DNA replication
- E. b and d are correct

Answer: D

31. Which chemical group is at the 5' end of a single polynucleotide strand?

- A. Hydroxyl group
- B. Phosphate group
- C. Diester group
- D. Nitrogen group
- E. None of the above

Answer: A

32. DNA polymerase I ...

- A. joins Okazaki fragments
- B. synthesizes primers
- C. synthesizes tRNA
- D. removes primers and replaces them with DNA
- E. all of the above

Answer: D

33. In a nucleosome, the DNA is wrapped around:

- A. polymerase molecules
- B. ribosomes
- C. histones
- D. a thymine dimer
- E. spliceosome

Answer: C

34. Which of the following true about leading strand?

- A. It needs only one primer
- B. It is synthesized continuously
- C. It is synthesized as a series of segments called the Okazaki fragments
- D. It is elongated in 3' to 5' direction
- E. Only A and B are correct

Answer: E

35. If adenine paired with guanine and cytosine paired with thymine the shape of DNA molecule would:

- A. Be longer
- B. Be shorter
- C. Be circular
- D. Have irregular widths along its length
- E. Be unwinded

Answer: D

36. Cytosine makes up 38% of the nucleotide bases in a sample of DNA, what the percentage of the thymine in this sample will be?

- A. 12
- B. 24
- C. 31
- D. 38
- E. It cannot be determine

Answer: A

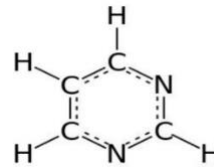
37. The enzyme that breaks, swivels, and rejoin the parental strands of DNA is:

- A. Helicase
- B. DNA polymerase I
- C. DNA ligase
- D. Primase
- E. Topoisomerase

Answer: E

38. The molecule shown in the figure is:

- A. Purine base
- B. Pyrimidine base
- C. Sugar
- D. Fatty acid
- E. Amino acid



Answer: B

39. A DNA strand grows only in 5' to 3' direction because:

- A. DNA polymerase can only add nucleotides to the 3' end of the growing strand
- B. DNA polymerase can only add nucleotides to the 5' end of the growing strand
- C. The DNA molecule only unwinds in the 5' to 3' direction
- D. DNA polymerase requires the addition of a starter nucleotide at the 5' end
- E. mRNA can only read a DNA molecule in the 5' to 3' direction

Answer: A

40. Which of the following is true about bacterial chromosome?

- A. Single linear strand of DNA
- B. Double circular strand of DNA
- C. Single circular strand of DNA
- D. Double linear strand of DNA
- E. Double linear strand of RNA

Answer: B

41. Which of the following enzymes is not involved in nucleotide excision repair:

- A. Nuclease
- B. Ligase
- C. Primase
- D. DNA polymerase
- E. Both A and C

Answer: C

42. Which of the following statement is correct about DNA replication?

- A. DNA replication proceeds in both directions of the origin of replication
- B. DNA replication is dispersive
- C. topoisomerase unwinds the double helix at the replication fork

Answer: A

43. The enzyme that involved in replacement of RNA primers with DNA is:

- A. DNA poly III
- B. DNA poly I
- C. Ligase
- D. Helicase
- E. Primase

Answer: B

44. The first step of replication is catalyzed by:

- A. Helicase
- B. DNA Polymerase
- C. Ligase
- D. Primase
- E. Single strand binding proteins

Answer: A

45. If % of G = 22, then the % of A =?

- A. 28 %
- B. 22 %
- C. 44 %
- D. 66 %
- E. None of the above

Answer: A

46. To repair thymine dimer by nucleotide excision repair, you need:

- A. Telomerase, Primase, DNA polymerase
- B. Telomerase, Helicase, single strand binding proteins
- C. Nuclease, DNA polymerase, DNA Ligase
- D. DNA ligase, Replication fork proteins, Nuclease

Answer: C

47. The correct order of DNA packaging is:

- A. Histone - Nucleosome – 30 nm fiber - 300 nm fiber (Looped domain) - metaphase chromosome
- B. 30 nm fiber - 300 nm fiber (Looped domain) – Histone – Nucleosome – metaphase chromosome
- C. 30 nm fiber - 300 nm fiber (Looped domain) - metaphase chromosome – Nucleosome -Histone

Histone - 30 nm fiber - 300 nm fiber (Looped domain) – Nucleosome – metaphase

Answer: A

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Chapter 17

48. Which is the energy rich molecule required for the initiation of translation?

- A. ATP
- B. GTP
- C. CTP
- D. AMP
- E. Glucose

Answer: B

49. Which of the following molecules is not normally found in a ribozyme?

- A. Uracil
- B. Thiamine
- C. guanine
- D. Cytosine
- E. none of the following

Answer: B

50. As a ribosome translocate along an mRNA molecule by one codon, which of the following occurs?

- A. The tRNA that was in the A site moves into the P site
- B. the tRNA that was in the P site moves into the A site
- C. the tRNA that was in the A site moves into the E site and is released
- D. the tRNA that was in the A site departs from the ribosome via a tunnel
- E. the polypeptide enters the E site

Answer: A

51. During normal translation, where would you expect to find tRNA attached to single amino acid?

- A. E site
- B. P site
- C. A site
- D. Both E and P
- E. Both A and P

Answer: E

52. Which of the following components does not form part of the transcription initiation complex in eukaryotic promoter?

- A. TATA box
- B. Start point
- C. Transfer RNA
- D. Transcription factors
- E. RNA polymerase

Answer: C

53. After mRNA (5' -AUGUAUACAGCACAUCGAUGACAA- 3') translation is completed, what will be the first amino acid and the total number of amino acids in the synthesized polypeptide?

- A. Methionine. 9 amino acids
- B. Methionine, 7 amino acids
- C. arginine, 8 amino acids
- D. methionine, 6 amino acids
- E. methionine, 8 amino acids

Answer: D

54. What is a ribozyme?

- A. A mutated ribosome
- B. An RNA with enzymatic activity
- C. A DNA sequence near the promoter that assists in the binding of RNA polymerase
- D. A biological catalyst consisting of DNA
- E. An enzyme that holds open the DNA double helix while RNA polymerase adds nucleotides

Answer: B

55. Aminoacyl-tRNA synthetases:

- A. Binds the correct amino acid to the empty tRNA
- B. Binds the tRNA to the anticodon
- C. Binds the amino acids together
- D. Binds the tRNA to the mRNA
- E. Cuts and assemble the tRNA molecule

Answer: A

56. Transcription in eukaryotes requires which of the following in addition to RNA polymerase?

- A. The protein product of primer
- B. Start and stop codons
- C. Ribosomes
- D. Transcription factors
- E. Aminoacyl synthetase

Answer: D

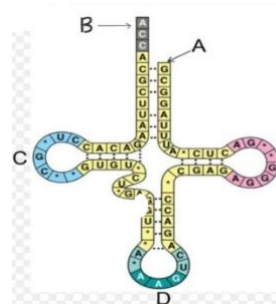
57. Once transcribed, eukaryotic mRNA typically undergoes alterations that include:

- A. Union the ribosomes
- B. Fusion into circular forms known as plasmid
- C. Linkage to histone molecules
- D. Excision of introns
- E. Fusion with other newly transcribed mRNA

Answer: D

58. Which letter represent the amino acid attachment site?

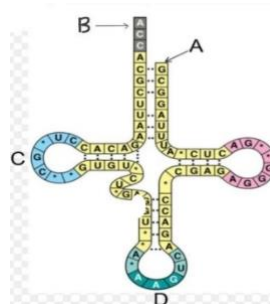
- A. A
- B. B
- C. C
- D. D
- E. None of the above



Answer: B

59. The figure represents tRNA that recognizes and binds the amino acid phenylalanine. Which codon on the mRNA strand codes for this amino acid?

- A. UGG
- B. GUG
- C. UUC
- D. CUU
- E. CAU



Answer: C

60. What are the components of a spliceosome?

- A. DNA and protein
- B. protein and small nuclear RNA
- C. Exons and introns
- D. proteins and mRNA
- E. coding and noncoding RNAs

Answer: B

61. The transcription factors can:

- A. Regulate the synthesis of DNA in response to a signal
- B. Regulate the release of calcium from the endoplasmic reticulum
- C. Compose the spliceosome which facilitates mRNA splicing
- D. Mediate the binding of RNA polymerase to the parental strand of DNA
- E. Facilitate the termination of the mRNA transcript

Answer: D

62. As a molecule of mRNA is moved through a ribosome, _____ are _____ into _____, one by one until the top codon is reached

- A. codons, translated, amino acids
- B. codons, transcribed, amino acids
- C. codons, replicated, amino acids
- D. codons, translated, nucleotides
- E. codons, transcribed, nucleotides

Answer: A

63. SRP molecules function involve:

- A. Enhance the progress of translation by the ribosome
- B. Dock the ribosome onto Golgi apparatus membrane
- C. Arresting synthesis of a nascent membrane protein
- D. Targeting proteins to ER
- E. Acting as a chaperone

Answer: D

64. How many nucleotides are needed to code for a protein with 450 amino acids?

- A. 450×1
- B. 450×2
- C. 450×3
- D. 450×4
- E. We cannot determine

Answer: C

65. Which component is the last to join the initiation complex during the initiation of translation?

- A. the mRNA molecule
- B. the small ribosomal subunit
- C. the large ribosomal subunit
- D. the initiator tRNA
- E. both B and C

Answer: C

66. A nucleotide-pair substitution is

- A. insertion of nucleotide pair in a gene
- B. deletion of nucleotide pair in a gene
- C. replacement of nucleotide pair with another pair of nucleotides
- D. replacement of nucleotide pair with nucleotide analogs
- E. C and D are correct

Answer: C

67. Sickle-cell disease is the result of which kind of mutation?

- A. Point mutation
- B. Silent mutation
- C. Missense mutation
- D. Nonsense mutation

Answer: A

68. During elongation which site in the ribosome represents the location where a codon being read?

- A. P site
- B. A site
- C. The small ribosomal subunit
- D. mRNA binding site

Answer: B

69. What is the effect of a nonsense mutation in a gene?

- A. It changes an amino acid in the encoded protein
- B. It has no effect on the amino acid sequence of the encoded protein
- C. It introduces a stop codon into the mRNA, causes translation to be terminated prematurely
- D. It alters the reading frame of the mRNA that prevents introns from being excised.

Answer: C

70. The change in a nucleotide pair may transform one codon into another that is translated into the same amino acid is described as.....

- A. silent mutation
- B. nonsense mutation
- C. missense mutation
- D. frameshift mutation
- E. all of the above

Answer: A

71. Which components not directly involved in translation:

- A. mRNA
- B. DNA
- C. RNA
- D. Ribosomes
- E. GTP

Answer: B

72. Frameshift mutations result from:

- A. Addition or deletion of nucleotides
- B. Introducing a stop codon into the mRNA, causes translation to be terminated prematurely
- C. Changing an amino acid in the encoded protein
- D. It has no effect on the amino acid sequence of the encoded protein

Answer: A

73. The 5' end of pre-mRNA is modified by addition of:

- A. A cap
- B. An intron
- C. An exon
- D. Poly-A tail
- E. Dose not modified

Answer: A

74. Which of the following protect mRNA from degradation?

- A. Poly-A tail
- B. 5' cap
- C. Introns
- D. Exons
- E. A and B only

Answer: E

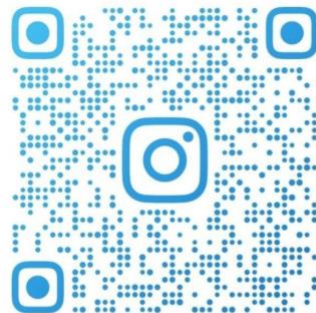
75. Processing of pre-mRNA into mRNA occur in :

- A. Cytoplasm
- B. Cytosol
- C. Nucleus
- D. Nucleolus
- E. None of the above

Answer: C

THE END

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DRAMQ02