BIOLOGY

First 023

1. Some "muscle tears" involve the rupture of:
A. Tight junctions
B. Desmosomes
C. Gap junctions
Correct Answer: B. Desmosomes
Explanation: Desmosomes are specialized structures that connect muscle cells and provide mechanical strength.

2. Which of the following statements about unsaturated fats is false?
A. Contains a double bond
B. Can be attached to glycerol to form a fatty acid
C. Exists in plant oils
D. Is liquid at room temperature
E. Is present in animals like cows
Correct Answer: E. Is present in animals like cows
Explanation: Unsaturated fats are primarily found in plant oils, not in significant amounts in animal fats.

3. Which of the following contains an ester bond?
A. DNA
B. RNA
C. Fats
D. DNA & RNA
E. DNA, RNA, and fats
Correct Answer: C. Fats
Explanation: Fats (triglycerides) contain ester bonds formed between glycerol and fatty acids.

4. All of the following are carbohydrates except:
A. Glucose
B. Fructose
C. Glycine
Correct Answer: C. Glycine
Explanation: Glycine is an amino acid, not a carbohydrate.

5. Rough ER consists of continuous membranes and sacs called:
A. Cristae

B. Cisternae
Correct Answer: B. Cisternae
Explanation: Cisternae are the flattened membrane sacs of the endoplasmic reticulum.

6. Animal cells cannot convert light energy to chemical energy because they lack:
A. Mitochondria
B. Chloroplasts
Correct Answer: B. Chloroplasts
Explanation: Chloroplasts are necessary for photosynthesis, which converts light energy into chemical energy.

7. Which organelles are responsible for energy conversion?
Correct Answer: Mitochondria and chloroplasts
Explanation: Both organelles play crucial roles in converting energy forms; mitochondria in cellular respiration and chloroplasts in photosynthesis.

8. What type of junction prevents the flow of fluid between cells in epithelial tissue?
A. Gap junctions
B. Tight junctions
C. Desmosomes
Correct Answer: B. Tight junctions
Explanation: Tight junctions seal adjacent epithelial cells, preventing fluid leakage.

9. Which of the following is considered an electrogenic pump?
A. Sodium-potassium pump
B. H^+ sucrose cotransporter
C. H^+ pump
D. A & C
E. All of the above
Correct Answer: D. A & C
Explanation: Both the sodium-potassium pump and the H^+ pump contribute to the generation of a membrane potential.

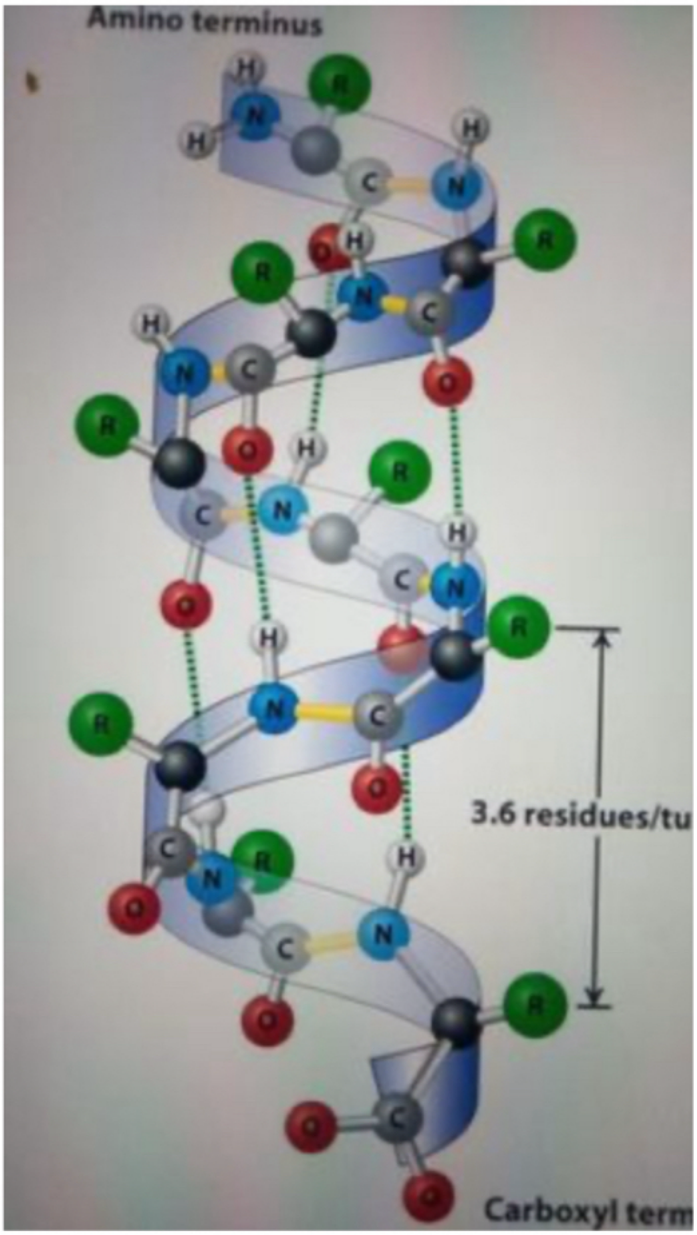
10. Which of the following acts as a fluidity buffer?
A. Phospholipids
B. Proteins
C. Cholesterol
D. Glycoproteins

E. Glycolipids
Correct Answer: C. Cholesterol
Explanation: Cholesterol helps maintain membrane fluidity across temperature changes.

11. If a plant cell with 5% salt concentration is placed in a 12% salt concentration aqueous solution, what will happen?
Correct Answer: Water moves out of the cell, resulting in plasmolysis.
Explanation: The higher external salt concentration causes water to exit the cell, leading to cell shrinkage.

12. The type of junction that can be seen between heart (cardiac muscle) cells is:
A. Tight junction
B. Gap junction
C. Desmosomes
D. Plasmodesmata
E. None of the above
Correct Answer: B. Gap junction
Explanation: Gap junctions allow for electrical signals to pass between cardiac muscle cells, facilitating synchronized contractions.

13. what this structure?



Correct Answer: Alpha helix

14. Ribosomal RNA is synthesized in:

A. Ribosome

B. Nucleolus

C. Rough ER

Correct Answer: B. Nucleolus

Explanation: The nucleolus is the site where ribosomal RNA (rRNA) is produced.

15. What functions like rivets fastening cells together into strong sheets?

A. Gap junction

B. Desmosomes

C. Tight junction

D. Plasmodesmata

Correct Answer: B. Desmosomes
Explanation: Desmosomes provide structural support by linking adjacent cells tightly.

16. Which type of junction is found adjacent in heart muscle and animal embryos?
A. Gap junction
B. Desmosomes
C. Tight junction
D. Plasmodesmata
Correct Answer: A. Gap junction
Explanation: Gap junctions facilitate communication and electrical coupling in cardiac muscle.

17. What are the protein subunits called that form microtubules?
Correct Answer: Tubulin
Explanation: Tubulin is the protein that polymerizes to form microtubules.

18. Which organelle is found in both animal and plant cells?
A. Cell wall
B. Centriole
C. Peroxisome
D. Central vacuole
E. Chloroplasts
Correct Answer: C. Peroxisome
Explanation: Peroxisomes are present in both plant and animal cells, involved in lipid metabolism and detoxification.

19. How many water molecules are needed to hydrolyze a polymer consisting of four monomers?
A. 2
B. 3
C. 4
D. 5
Correct Answer: B. 3
Explanation: Hydrolysis of a polymer requires one water molecule for each bond broken, so three bonds need three water molecules.

20. What type of microscope is used to see proteins?
A. Brightfield specimen
B. Fluorescence

C. Phase contrast
D. Deconvolution
E. Electron microscope
Correct Answer: E. Electron microscope
Explanation: Electron microscopes provide the high resolution necessary to visualize proteins.

21. Which amino acid has a net negative charge at cell pH 7.3?
A. Glutamic acid
B. Lysine
C. Asparagine
D. Proline
Correct Answer: A. Glutamic acid
Explanation: Glutamic acid has a carboxyl group that can lose a proton, giving it a negative charge.

22. Vertebrate sex hormones are classified as:
A. Steroids
B. Proteins
C. Fats
Correct Answer: A. Steroids
Explanation: Sex hormones, such as estrogen and testosterone, are steroid hormones.

23. Which process is passive transport that requires the aid of proteins?
A. Osmosis
B. Facilitated osmosis
C. Facilitated diffusion
D. Active transport
Correct Answer: C. Facilitated diffusion
Explanation: Facilitated diffusion allows substances to cross membranes with the help of transport proteins without energy input.

24. Infoldings in the inner mitochondrial membrane are called:
A. Cristae
B. Cisternae
C. Stroma
D. Thylakoid
E. Chloroplast
Correct Answer: A. Cristae

Explanation: Cristae increase the surface area for ATP production in mitochondria.

25. Fiber from a substance that is hydrophilic but insoluble is:
A. Amylose
B. Amylopectin
C. Starch
D. Cellulose
Correct Answer: D. Cellulose
Explanation: Cellulose is a structural polysaccharide that is hydrophilic but insoluble in water.

26. Where is DNA located in animal cells?
A. Mitochondria and nucleus only
B. Nucleus only
C. Nucleus, mitochondria, and ER
D. ER only
E. None of the above
Correct Answer: A. Mitochondria and nucleus only
Explanation: DNA is found in both the nucleus and mitochondria in animal cells.

27. Which of the following contains cisternae?
A. Rough ER
B. Mitochondria
C. Golgi apparatus
D. Only A and C
E. All of them
Correct Answer: D. Only A and C
Explanation: Both Rough ER and Golgi apparatus have cisternae; mitochondria do not.

28. An integral protein:
A. Is a membrane protein
B. Penetrates the hydrophobic interior of the membrane
C. Contains hydrophobic parts with nonpolar amino acids
D. Consists of hydrophobic parts that coil in alpha helices
E. All of the above
Correct Answer: E. All of the above
Explanation: Integral proteins are embedded in the membrane and have hydrophobic regions.

29. Which of the following statements about DNA and RNA is true?

A. Are polymers
B. Are not macromolecules
C. Consist of the same 4 nitrogenous bases
D. Contain hexoses
Correct Answer: Are polymers
Explanation: Both DNA and RNA are polymers made of nucleotides.

30. Which of the following is not a component of a nucleotide?
A. Ribose
B. Phosphate group
C. Ribulose
D. Nitrogen base
Correct Answer: C. Ribulose
Explanation: Ribulose is not a component of nucleotides; nucleotides consist of a ribose or deoxyribose sugar, a phosphate group, and a nitrogenous base.

31. In an aqueous solution, the solvent is:
A. Any polar solvent
B. Water
C. Methanol
Correct Answer: B. Water
Explanation: Water is the primary solvent in biological systems.

32. Which of the following breaks fatty acids down to sugars in fatty tissues in plants?
A. Mitochondria
B. Chloroplasts
C. Glyoxysome
Correct Answer: C. Glyoxysome
Explanation: Glyoxysomes are specialized organelles in plants that convert stored fats into sugars during germination.

33. Which of the following statements is a mismatch?
A. Smooth ER - Calcium storage
B. Peroxisome - A part of the endomembrane system
C. Ribosomes - Synthesis of proteins
D. Lysosomes - Autophagy
E. Microfilament - Movement of chromosomes in cell division
Correct Answer: E. Microfilament - Movement of chromosomes in cell division

Explanation: Microtubules, not microfilaments, are responsible for chromosome movement during cell division.

34. Hydrolytic enzymes in lysosomes are synthesized in:
A. Lysosomes
B. Ribosomes
Correct Answer: B. Ribosomes
Explanation: Hydrolytic enzymes are produced in ribosomes and then transported to lysosomes.

35. Which of the following statements about cellulose is true?
A. A structural polysaccharide
B. A primary component of plant cell walls
C. Not branched
D. Hydrophilic and water-insoluble
E. All of the above
Correct Answer: All of the above
Explanation: Cellulose is a linear, structural polysaccharide found in plant cell walls.

36. Water is a good solvent for all the following except:
A. Olive oil
B. Sucrose
C. Fructose
D. Ionic compounds
Correct Answer: A. Olive oil
Explanation: Olive oil is nonpolar and does not dissolve in water.

37. The interaction between water molecules is called:
A. Cohesion
B. Adhesion
Correct Answer: A. Cohesion
Explanation: Cohesion refers to the attraction between water molecules due to hydrogen bonding.

38. Which statement is FALSE about polypeptides?
A. A branched polymer
B. Contains peptide bonds
C. Differs in sequence of amino acids
D. Formed by dehydration reactions

Correct Answer: A. A branched polymer
Explanation: Polypeptides are linear chains of amino acids, not branched.

39. In sickle cell anemia, valine in hemoglobin is substituted for:
A. Glutamine
B. Glutamic acid
C. Glycine
Correct Answer: B. Glutamic acid
Explanation: In sickle cell anemia, a single amino acid substitution occurs, where valine replaces glutamic acid.

40. Which of the following membrane components is NOT found in plant cell membranes?
Correct Answer: Cholesterol
Explanation: Cholesterol is typically found in animal cell membranes, not in plant cells.

41. The statement "hydrogen bonds are primarily responsible for holding together the secondary structure of proteins" is:
Correct Answer: True
Explanation: Hydrogen bonds stabilize the secondary structure of proteins, such as alpha helices and beta sheets.

42. The statement "peroxisomes are not part of the endomembrane system" is:
Correct Answer: True
Explanation: Peroxisomes are not considered part of the endomembrane system, as they have a different origin and function.

43. Water has its highest density at:
Correct Answer: Approximately 4 degrees Celsius
Explanation: Water is most dense at this temperature, which is why ice floats.

44. Which of the following is not a polysaccharide?
Correct Answer: Glycine
Explanation: Glycine is an amino acid, while polysaccharides are long chains of sugar molecules.

45. Which of the following is a property of water due to hydrogen bonds?
A. Cohesion
B. Adhesion
C. High surface tension

D. All of the above
Correct Answer: D. All of the above
Explanation: Hydrogen bonds contribute to water's cohesion, adhesion, and high surface tension.

46. The statement "CO_2 can pass through phospholipid bilayers because it is nonpolar" is:
Correct Answer: True
Explanation: Nonpolar molecules like CO_2 can easily diffuse through the hydrophobic core of the phospholipid bilayer.

47. Water passes through the phospholipid bilayer quickly by:
Correct Answer: Aquaporins
Explanation: Aquaporins are channel proteins that facilitate the rapid transport of water across cell membranes.

48. Which of the following are hollow tubes?
Correct Answer: Microtubules
Explanation: Microtubules are hollow cylindrical structures that are part of the cytoskeleton.

49. What happens to a plant cell when placed in a hypotonic solution?
Correct Answer: It will become turgid.
Explanation: Water enters the cell, causing it to swell and become turgid due to the pressure against the cell wall.

50. Cells that adhere to each other using intermediate filaments belong to which type of junction?
Correct Answer: Desmosomes
Explanation: Desmosomes link cells together and provide mechanical stability.

51. Cells sealing to each other belong to which type of junction?
Correct Answer: Tight junctions
Explanation: Tight junctions form a barrier that prevents the passage of substances between cells.

52. What is the difference between DNA and RNA?
Correct Answer: DNA contains thymine and deoxyribose sugar, while RNA contains uracil and ribose sugar.
Explanation: This difference in bases and sugars distinguishes the two nucleic acids.

53. In aqueous solution, the solvent is:
Correct Answer: Water
Explanation: Water is the primary solvent in biological systems.

54. Lysosomes work best in:
Correct Answer: Acidic conditions
Explanation: Lysosomal enzymes are activated at low pH, which is maintained within lysosomes.

55. Fructose is joined by:
Correct Answer: 1-2 glycosidic bond
Explanation: In sucrose, fructose is linked to glucose by a 1-2 glycosidic bond.

56. Triglycerides contain:
Correct Answer: Three fatty acids and one glycerol molecule
Explanation: Triglycerides are formed from three fatty acid molecules attached to a glycerol backbone.

57. Sickle cell anemia affects:
Correct Answer: Hemoglobin
Explanation: This genetic condition results in abnormal hemoglobin, affecting red blood cell shape and function.

58. Prokaryotes do not have:
Correct Answer: Nuclear envelope
Explanation: Prokaryotic cells lack a defined nucleus and nuclear envelope.

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First 022

Q1. What is the difference between RNA and DNA?
Answer: DNA contains deoxyribose sugar, while RNA contains ribose sugar.

Q2. Which of the following is not part of the endomembrane system?
A) Nuclear envelope
B) Golgi apparatus
C) Lysosome

D) Mitochondria
E) Endoplasmic reticulum
Correct Answer: D) Mitochondria
Explanation: Mitochondria are not part of the endomembrane system.

Q3. What is the site of cellular respiration?
Answer: Mitochondria

Q4. Why can water pass through the plasma membrane?
Answer: Water is hydrophilic.

Q5. Which of the following is responsible for synthesizing ribosomes?
A) Nuclear envelope
B) Golgi apparatus
C) Nucleolus
D) Endoplasmic reticulum
E) None of the above
Correct Answer: C) Nucleolus
Explanation: The nucleolus is responsible for ribosome synthesis.

Q6. Which organelle is responsible for manufacturing certain macromolecules such as pectin?
A) Mitochondria
B) Golgi apparatus
C) Plasma membrane
D) Nuclear envelope
E) Ribosomes
Correct Answer: B) Golgi apparatus
Explanation: The Golgi apparatus is involved in the synthesis and modification of macromolecules.

Q7. A hollow tube is characteristic of which of the following?
A) Microfilaments
B) Intermediate filaments
C) Microtubules
D) Integrins
E) Collagen
Correct Answer: C) Microtubules

Explanation: Microtubules are hollow tubes that are part of the cytoskeleton.

Q8. The function of plasmodesmata is similar to which of the following?
A) Desmosomes
B) Tight junctions
C) Gap junctions
D) Fibronectin
E) None of the above
Correct Answer: C) Gap junctions
Explanation: Plasmodesmata allow communication between plant cells, similar to gap junctions in animal cells.

Q9. Which of the following is not a type of carbohydrate?
A) Glucose
B) Fructose
C) Glycine
D) Sucrose
E) Maltose
Correct Answer: C) Glycine
Explanation: Glycine is an amino acid, not a carbohydrate.

Q10. Ovalbumin is an example of a:
A) Transport protein
B) Hormonal protein
C) Storage protein
D) Receptor protein
E) None of the above
Correct Answer: C) Storage protein
Explanation: Ovalbumin serves as a storage protein in egg whites.

Q11. Adhesion and cohesion result from:
A) Hydrogen bonds
B) Covalent bonds
C) Surface tension
D) A and C are correct
Correct Answer: D) A and C are correct
Explanation: Both adhesion and cohesion are due to hydrogen bonding.

Q12. ATP and carrier proteins are connected to:

A) Active transport

B) Passive transport

C) Phagocytosis

D) B and C

E) A and C

Correct Answer: A) Active transport

Explanation: ATP is used in active transport processes.

Q13. The sequence of amino acids in a polypeptide chain is called:

A) Primary structure

B) Secondary structure

C) Tertiary structure

D) Quaternary structure

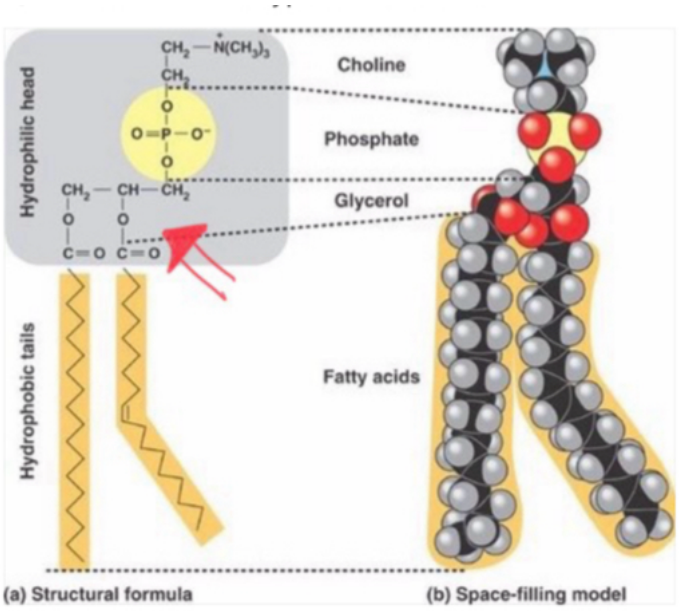
E) All of the above are correct

Correct Answer: A) Primary structure

Explanation: The primary structure refers specifically to the linear sequence of amino acids.

Q14. Identify the type of bond in the following structural formula:

(The bonds connecting fatty acids to glycerol)



A) Ester

B) Phosphodiester

C) Glycosidic linkage

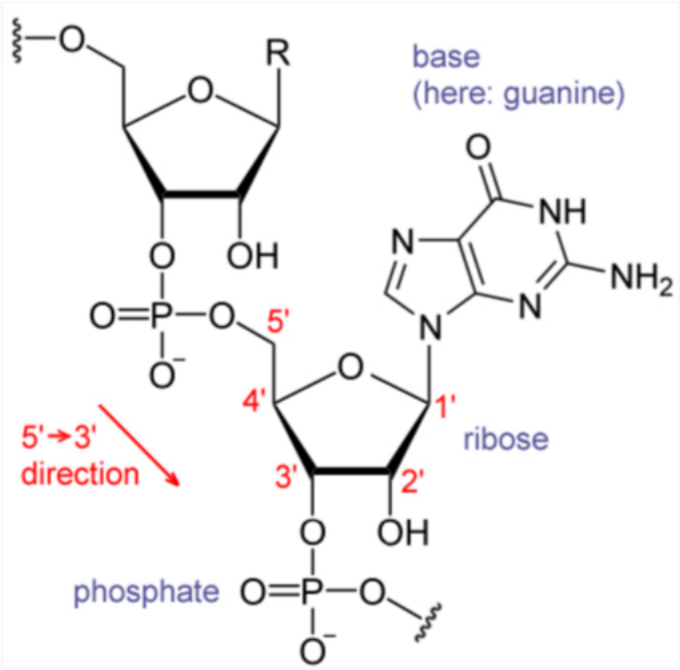
D) Peptide bond

E) Hydrogen bond

Correct Answer: A) Ester

Explanation: The bonds connecting fatty acids to glycerol are ester bonds.

Q15. Which of the following represents RNA?
Correct Answer: The molecule containing ribose, phosphate, and nitrogenous base (like guanine).



Explanation: RNA is characterized by its ribose sugar and the presence of uracil instead of thymine.

Q16. What is the most abundant glycoprotein in the extracellular matrix (ECM) of animal cells?
A) Collagen
B) Proteoglycan
C) Fibronectin
D) Integrins
E) None of the above
Correct Answer: A) Collagen
Explanation: Collagen is the primary glycoprotein found in the ECM.

Q17. Alpha helices in proteins represent:
A) Primary structure
B) Secondary structure
C) Tertiary structure
D) Quaternary structure

Correct Answer: B) Secondary structure
Explanation: Alpha helices are a type of secondary structure in proteins.

Q18. An example of an electrogenic pump is:
A) H^+ pump
B) Na^+/K^+ pump
C) H^+/sucrose pump
D) A + B
E) A, B, C
Correct Answer: D) A + B
Explanation: Both the H^+ pump and Na^+/K^+ pump are considered electrogenic.

Q19. Hemoglobin presents a:
A) Primary structure
B) Secondary structure
C) Tertiary structure
D) Quaternary structure
E) All of them
Correct Answer: D) Quaternary structure
Explanation: Hemoglobin has a quaternary structure due to its multiple polypeptide chains.

Q20. Phospholipid tails are hydrophobic because they contain:

1. Cholesterol
2. Integral proteins
3. Hydrocarbons
4. Carbohydrates
   Correct Answer: 3) Hydrocarbons
   Explanation: The hydrocarbon tails of phospholipids are hydrophobic.

Q21. Hydrogen bonding contributes to many properties of water, except:
A) Polarity of water
B) Cohesion
C) Adhesion
D) Surface tension
Correct Answer: A) Polarity of water
Explanation: Polarity is a characteristic of water molecules, not a result of hydrogen bonding.

Q22. The cell walls of fungi are composed of:
A) Cellulose

B) Chitin
C) Phospholipids
D) Carbohydrates
Correct Answer: B) Chitin
Explanation: Fungal cell walls are primarily made of chitin.

Q23. Sickle-cell disease is caused by the substitution of one amino acid (valine) for which amino acid?
Answer: Glutamic acid
Explanation: In sickle-cell disease, valine replaces glutamic acid in the hemoglobin protein.

Q24. Which structure functions like rivets, fastening cells together into strong sheets?
A) Tight junctions
B) Desmosomes
C) Plasmodesmata
D) Gap junctions
Correct Answer: B) Desmosomes
Explanation: Desmosomes provide mechanical strength by anchoring cells together.

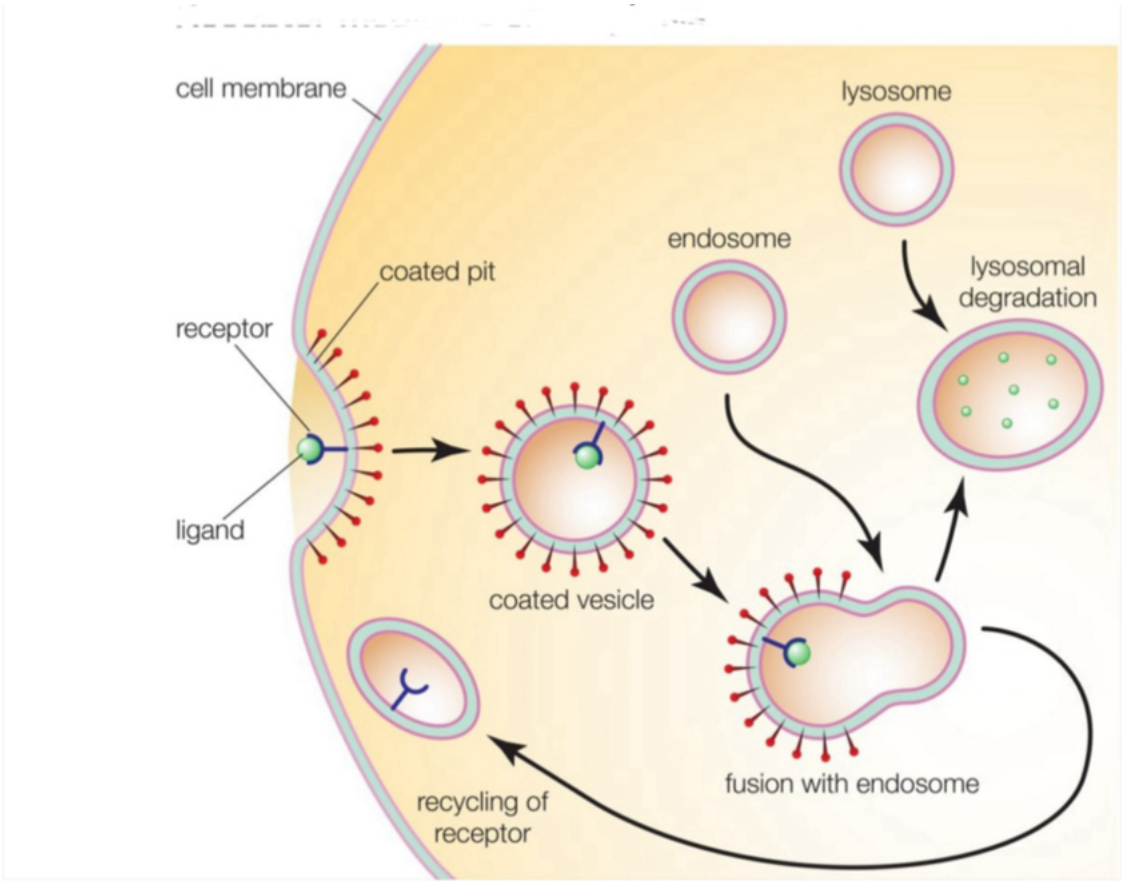
Q25. All of these can be found in a bacterium EXCEPT:
A) Cell wall
B) DNA
C) Ribosomes
D) Cell membrane
E) Endoplasmic reticulum
Correct Answer: E) Endoplasmic reticulum
Explanation: Bacteria do not have an endoplasmic reticulum.

Q26. What is the function of intermediate filaments?
A) Cell motility
B) Anchoring the nucleus
C) Formation of the nuclear lamina
D) A + B
E) B + C
Correct Answer: E) B + C
Explanation: Intermediate filaments provide structural support and anchor the nucleus.

Q27. Which statement about fats is false?

Answer: Fat is a very polar molecule & fat is a polymer.
Explanation: Fats are nonpolar molecules and are not considered polymers.

Q28. What is this process called?



A) Exocytosis
B) Pinocytosis
C) Receptor-mediated endocytosis
Answer: C) Receptor-mediated endocytosis

Q29. Which of the following is mismatched?
A) Peroxisome - Endomembrane system
B) Lysosome - Internal digestion
C) Ribosomes - Protein synthesis
D) Golgi - Protein trafficking
Correct Answer: A) Peroxisome - Endomembrane system
Explanation: Peroxisomes are not part of the endomembrane system.

Q30. What is false about unsaturated fats?
A) They form a double bond.
B) They are found in animals like cows.

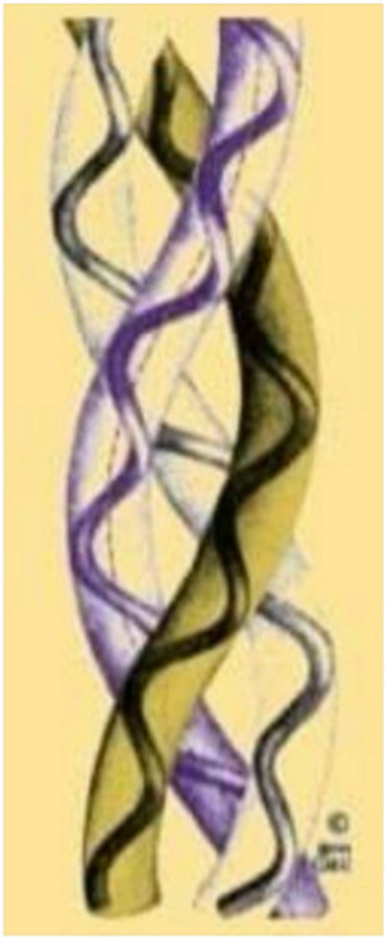
C) They can join with glycerol to form a fat molecule.
D) They are found in plant oils.
Correct Answer: B) They are found in animals like cows.
Explanation: Unsaturated fats are primarily found in plant oils, not in significant amounts in animals.

Q31. Which of the following is hydrophobic?
A) Triglycerides
B) Starch
C) Cellulose
D) Glucose
Correct Answer: A) Triglycerides
Explanation: Triglycerides are hydrophobic due to their long fatty acid chains.

Q32. What type of protein structure is represented by this illustration?

A) Fibrous protein
B) Globular protein
C) Quaternary protein
D) Primary protein
E) A and C
Correct Answer: A) Fibrous protein
Explanation: Fibrous proteins are typically elongated and structural.

Q33. Which of the following is true about this figure?



A) It is a fibrous protein.
B) It is made of 3 polypeptides.
C) It represents the quaternary structure of protein.
D) It is a globular protein.
E) All of the above except (D).
Correct Answer: E) All of the above except (D).
Explanation: The description indicates a fibrous protein structure.

Q34. What is the function of rough ER?
Answer: Secretion of proteins
Explanation: The rough endoplasmic reticulum is studded with ribosomes and is involved in protein synthesis.

Q35. If the concentration of salts in a plant cell is 5% and it is placed in a solution with a concentration of 12%, what will happen to the cell?
Answer: Plasmolysis occurs.
Explanation: Water will move out of the cell, leading to plasmolysis.

Q36. An animal cell does not convert light into energy. What is it lacking?
Answer: Chloroplast
Explanation: Chloroplasts are necessary for photosynthesis, which converts light energy into chemical energy.

Q37. What is directly responsible for the digestion process in cells?
Answer: Lysosomes
Explanation: Lysosomes contain hydrolytic enzymes that break down waste materials and cellular debris.

Q38. What type of transport involves Na^+ transferring with glucose?
Answer: Cotransport
Explanation: Cotransport refers to the simultaneous transport of two substances across a membrane.

Q39. Which of the following is the thickest?
A) Microfilament
B) Microtubules
C) Intermediate filament
Correct Answer: B) Microtubules
Explanation: Microtubules are the largest components of the cytoskeleton.

Q40. What type of transport involves moving from high concentration to low concentration?
Answer: Facilitated diffusion
Explanation: Facilitated diffusion is the process of passive transport with the help of transport proteins.

Q41. What is not a component of nucleic acids?
Answer: Ribulose
Explanation: Ribulose is not found in nucleic acids; ribose is the sugar component.

Q42. Sickle cell disease affects which component?
Answer: Hemoglobin
Explanation: Sickle cell disease is caused by mutations in the hemoglobin gene.

Q43. Which components are not present in the extracellular matrix (ECM)?
Answer: Cellulose
Explanation: Cellulose is typically found in plant cell walls, not in the ECM of animal cells.

Q44. The middle lamella is a thin layer rich in sticky polysaccharides known as:
Answer: Pectin
Explanation: Pectin is a polysaccharide that helps bind cells together in plant tissues.

Q45. Which statement is true about microfilaments?
Answer: They are composed of two intertwined strands of actin.
Explanation: Microfilaments are part of the cytoskeleton and consist primarily of actin.

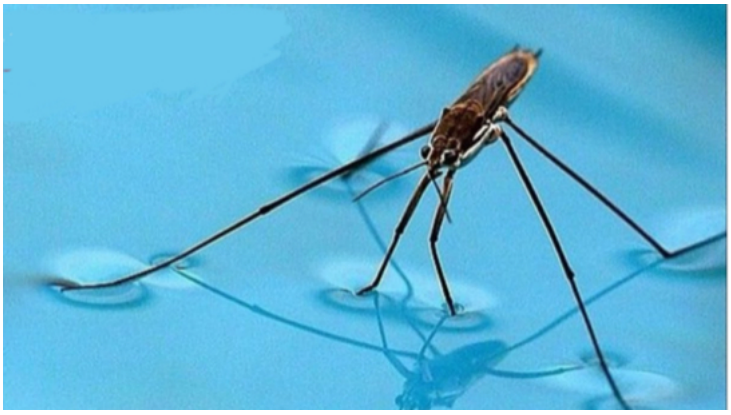
Q46. Tubulin is a component of:
Answer: Microtubules
Explanation: Tubulin protein subunits polymerize to form microtubules.

Q47. How high is the magnification of a light microscope?
Answer: 1000x
Explanation: Light microscopes can typically magnify up to 1000 times.

Q48. What is the difference between aldoses and ketoses?
Answer: The position of the carbonyl group.
Explanation: Aldoses have an aldehyde group at the end, while ketoses have a ketone group within the carbon chain.

Q49. Which of the following statements about proteins is not true?
Answer: It is branched.
Explanation: Proteins are not branched; they are linear chains of amino acids.

Q50. What is the property of water illustrated in the image?



A) Cohesion

B) Surface tension

C) Adhesion

Answer: B) Surface tension

First 021

Q1) Which of the following is not a type of junction in animal cells?

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

Q2) 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

Q3) Lipid soluble (hydrophobic) small molecules. CO_2 and O_2 enter the cell by

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

Q4) 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

Q5) What mechanisms do plants use to transport sucrose produced by photosynthesis into specialized cells in leaves against its concentration gradient?

A. Diffusion
B. Sucrose puming
C. Cotransport
D. Receptor mediated endocytosis

E. Phagocytosis

Q6) 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

Q7) 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

Q8) Which of the following properties is shared by starch and cellulose?

A. Digested by humans
B. Polymers of glucose
C. Structural carbohydrates
D. Branched carbohydrates
E. None of the above

Q9) You would expect a cell with an extensive Golgi apparatus to

A. Move actively
B. Perform photosynthesis
C. Secrete a lot of material
D. Store large amount of food
E. Make a lot of ATP

Q10) 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 membranes proteins are determined as the membrane is being packaged in the ER and Golgi.
E. Cell membrane orientation is determined by free ribosomes.

Q11) What bond between water molecules make them stick together?

A. Hydrogen bonds
B. Covalent bonds
C. Polar covalent bonds
D. VanderWaals forces
E. None of the above

Q12) Lakes and oceans, do not quickly fluctuate (change) in temperature. What is the reason for this phenomenon?

A. Water is an acid
B. Water is a versatile solvent
C. Water has a high specific heat
D. Water acts as a buffer
E. All of the above

Q13) Specific heat of water molecule contribute to the following, except

A. Organisms resist changes in body temperature
B. Ice floating on top of liquid water
C. Stabilize ocean temperature
D. Water heat of vaporization
E. None of the above

Q14) How many molecules of water are needed to completely hydrolyze a 25 monomer long polypeptide

A. 35
B. 24
C. 50
D. 25
E. Zero

Q15) Aldoses and ketoses differ in

A. The position of the carbonyl group
B. The position of the hydroxyl groups
C. The number of carbon atoms
D. The number of oxygen atoms
E. The position of carbon atom

Q16) A saturated fatty acid contains more ————- atoms than unsaturated fatty acid

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

Q17) Which of the following molecules is a not a polysaccharide?

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

Q18) Which is false about proteins?

A. Protein's specific structure determines how it works
B. Functional protein is not just a polypeptide chain
C. The bond linking amino acids is non covalent
D. Polypeptide backbone is the same in all polypeptides
E. The R group of amino acid monomers differs from one amino acid to another

Q19) Which level of protein organization is due to interactions between amino acid side chain groups?

A. Primary
B. Secondary
C. Tertiary
D. Quaternary

E. All of these

Q20) 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

Q21) Which pair is mismatched?

A. Amino acids polymer——————— protein

B. alpha Glucose polymer——————glycogen

C. B Glucose polymer——————cellulose

D. Purine——————— thymine

E. Fatty acid——————— hydrophobic

Q22) A microscope that exposes specimens to ultraviolet and forms an image with the resulting light emitted at a different wavelength is called a————— microscope.

A. Phase contrast

B. Fluorescence

C. Bright -field

D. Scanning electron

E. Transmission electron

Q23) In sucrose the linkage between glucose and fructose is a————linkage

A. 1-4 glycosidic

B. 1-4 ester

C. 1-6 glycosidic

D. 1-2 ester

E. 1-2 glycosidic

Q24) 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

Q25) 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

Q26) All types of nuclcie acids

A. are single-stranded molecules

B. are polymers

C. have hexose sugar

D. have deoxy-ribose

E. contain the same nitrogenous bases

Q27) A double-stranded DNA molecule contains 20 purines and 20 pyrimidine should be composed of

A. 20 adenine and 20 thymine

B. 20 thymine and 20 uracil

C. 40 cytosine

D. 40 cytosine and 40 guanine

E. 20 adenine and 20 guanine

Q28) Which microscope is usually good for use on living unstained cells?

A. Phase contrast

B. Fluorescence

C. Bright-field

D. Scanning electron

E. Transmission election

Q29) Which of the following structures is NOT present in a prokaryote cell?

A. Mitochondria

B. DNA

C. Cytoplasm

D. Ribosomes

E. plasma membrane

Q30) Which of the following is NOT true for the nuclear envelope?

A. It is exactly like other cellular membranes

B. The nuclear envelope separates the genetic material from the cytoplasm

C. It is a pair of membranes

D. It is porous (perforated)

E. It has bound ribosomes

Q31) Which of the following organelle is linked to Tay-Sachs disease?

A. Golgi apparatus

B. Chloroplast

C. Mitochondria

D. Lysosome

E. Rough endoplasmic reticulum

Q32) The ————acts as protein packaging and processing center in the cell?

A. Smooth Endoplasmic reticulum

B. Peroxisomes

C. Golgi apparatus

D. Nucleus

E. Nucleolus

Q33) In muscle cells————— is responsible for the storage and release of calcium ions

A. smooth Endoplasmic reticulum

B. rough Endoplasmic reticulum

C. Golgi apparatus

D. contractile vacuole

E. ECM

Q34) Which of the following contains enzymes that transfer hydrogen from various substrates to oxygen?

A. lysosome

B. vacuole

C. mitochondrion

D. Golgi apparatus

E. peroxisome

Q35) Which of the following is present in a prokaryotic cell?

A. mitochondrion

B. ribosome

C. nuclear envelope

D. chloroplast

E. ER

Q36) Which cytoskeletal element is involved in cytoplasmic streaming?

A. Intermediate filaments

B. Microfilaments

C. Microtubules

D. Motor proteins

E. All choices are correct

Q37) Signals between the ECM and the cytoskeleton may be transmitted by

A. fibronectin .

B. proteoglycans.

C. integrins.

D. collagen.

E. middle lamella.

Q38) Thylakoids, DNA, and ribosomes are all components found in

A. vacuoles

B. stroma

C. mitochondria

D. lysosomes

E. nuclei.

Q39) 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

Q40) Which of the following is true for H+/ sucrose cotransporter?

A. Works as a channel for the passage of sucrose and H+ across the cell membrane

B. Transports sucrose down its concentration gradient.

C. Transports H+ against its electrochemical gradient.

D. Transports sucrose against its concentration gradient and H+ along its electrochemical gradient.

E. None of the above

Q41) 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

Q42) The sodium-potassium pump moves

A. sodium ions out of the cell and potassium ions into the cell against their electrochemical gradients.

B. sodium ions into the cell and potassium ions out of the cell against their electrochemical gradients.

C. sodium and potassium ions into the cell along their electrochemical gradients.

D. sodium and potassium ions out of the cell against their electrochemical gradients.

E. none of the above

Q43) The process that releases substances from the cell via vesicles is

A. passive transport

B. facilitated diffusion

C. endocytosis

D. exocytosis

E. receptor mediated endocytosis

Q44) Which type of organelle is found in plant cells but NOT in animal cells?

A. Ribosomes

B. Mitochondria

C. Nuclei

D. Glyoxysomes

E. None of these

Q45) Motor proteins interact with what structures to achieve organelle movement in cells?

A. Plasmodesmata

B. Integrins

C. Ribosomes

D. Microtubules

E. Fibronectins

Q46) Which cytoskeletal elements are responsible for the formation of pseudopodia?

A. Intermediate filaments

B. Microfilaments

C. Microtubules

D. Motor proteins

E. All choices are correct

Q47) Ions can travel directly from the cytoplasm of one animal cell to the cytoplasm of an adjacent cell through

A. Plasmodesmata

B. Intermediate filaments

C. Tight junctions

D. Desmosomes

E. gap junctions

Q48) Animal cells adhere together strongly through ———— which are supported by intermediate filaments

A. Plasmodesmata

B. Cellulose fibers

C. Tight junction

D. Desmosomes

E. gap junctions

Q49) Which of the following is amphipathic?

A. Phospholipids

B. Cholesterol

C. Cellulose

D. Collagen

E. Glycogen

Q50) 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

Q51) In water molecule, the atom in which electrons spend more time will have a ———— charge, and the atom around which the electrons spend the least time will have————charge.

A. slightly negative, slightly positive

B. only positive charge

C. only negative charge

D. neutral charge

E. None of the above

Q52) The high heat capacity (specific heat) of water allows it to:

A. form additional hydrogen bonds

B. absorb large amounts of heat energy before the temperature changes

C. boil at higher temperatures than many liquids

D. B and C

E. None of the above

Q53) Oil does not dissolve in water because

A. Oil is a liquid

B. Oil is more dense than water

C. Oil molecules are non-polar

D. Oil is hydrophilic

E. None of the above

Q54) Which of the following is not a polymer?

A. Steroid

B. Starch

C. Cellulose

D. Chitin

E. DNA

Q55) Cellulose

A. is a polymer of sucrose subunits

B. is a storage polysaccharide of plants

C. Is a storage polysaccharide of animals

D. Is a major structural component of plant cell walls.

E. is a major structural component of cell membrane

Q56) A phospholipid molecule has

A. hydrophobic tail

B. hydrophilic head

C. three fatty acids

D. phosphate group

E. all except C

Q57) The term "Microfibril" is most related to

A. polypeptides

B. Cellulose

C. starch

D. amylose

E. amylopectin

Q58) Which of the following is concerned with the synthesis of phospholipids and steroids in the cell?

A. Rough Endoplasmic reticulum

B. Smooth Endoplasmic reticulum
C. Golgi apparatus
D. Lysosome
E. Plasma membrane

Q59) Nucleolus is concerned with:

A. producing mRNA
B. large and small ribosome subunit assembly
C. lysosome production
D. chromosome duplication
E. synthesis of tRNA

1-C	2-A	3-B	4-E	5-C	6-B	7-C	8-B	9-C	10-D
11-A	12-C	13-B	14-B	15-A	16-E	17-E	18-C	19-C	20-B
21-D	22-B	23-E	24-B	25-E	26-B	27-A	28-A	29-A	30-A
31-D	32-C	33-A	34-E	35-B	36-B	37-C	38-B	39-A	40-D
41-E	42-A	43-D	44-D	45-D	46-B	47-E	48-D	49-A	50-E
51-A	52-D	53-C	54-A	55-D	56-E	57-B	58-B	59-E	

BIOLOGY FIRST - 020
Chapter 3

1) How much heat must be absorbed by 10 grams of water to raise its temperature by 5°C? (Specific heat of water -4 J) Select one:
   A) 200 J
   B) 40 J
   C) 4 J
   D) 1000 J
   E) 500J
   Answer: A

2) All of the following are water properties essential for life on Earth except:
   A) Solvent
   B) Cohesion
   C) Expansion above 10 °C
   D) Surface tension
   E) Specific heat
   Answer: C

3) Hydrogen bonds between water molecule is responsible for the following properties of water, except:
   A) All of the choices
   B) Polarity
   C) Cohesion
   D) Surface tension
   E) Specific heat
   Answer: A

4) Specific heat of water contributes to the following except
   A) Water heat of vaporization
   B) None of the choices
   C) Ice floating in top of liquid water
   D) Stabilize ocean temperature
   E) Organisms resist changes in body temperature
   Answer: C

5) The sphere of water molecules around each dissolved ion is called a hydration shell. Select one:

A) True
B) False

Answer: A

6) All of the following materials are hydrophilic except:

A) Unsaturated fat
B) Lactose
C) NaCl
D) Starch
E) Cellulose

Answer: A

Chapter 5

7) four main categories of macromolecules in a cell are Select one:

A) 82Proteins, nucleic acids, carbohydrates, and lipids
B) Nucleic acids, carbohydrates, monosaccharides, and proteins
C) Proteins, DNA, RNA, and steroids
D) Monosaccharides, lipids, polysaccharides, and proteins
E) RNA, DNA, proteins, and carbohydrates

Answer: A

8) Denaturation causes changes in the protein's confirmation by disrupting Select one:

A) Hydrogen bonds
B) Ionic bonds
C) Hydrophobic interactions
D) All of the options are correct
E) Disulfide bonds

Answer: D

9) Dehydration and hydrolysis reactions involve removing or adding of --- to macromolecule subunits

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

Answer: A

10) What makes an amino acid different from another?

A) Different R groups attached to a carboxyl group
B) Different R groups attached to the amino groups
C) Different R groups attached to on Alpha carbon
D) All of the options are correct
E) Different asymmetric carbon

Answer: C

11) Large numbers of ribosomes are present in cells that specialize in producing which of the following molecules?

A) Glycogen
B) Lipids
C) Cellulose
D) Proteins
E) Nucleic acids

Answer: D

12) Proteins are involved in all of the following except:

A) Body defense
B) Enzymes
C) Signal receptor
D) Transport
E) Compact energy storage

Answer: E

13) Which of the following is correct regarding monomers and polymers?

A) None of the options is correct
B) Hydrolysis creates monomers and dehydration reactions break down monomers
C) Monomers are built from many identical building blocks linked by covalent bonds
D) Dehydration reactions assemble monomers and hydrolysis reactions break down polymers
E) All of the options are correct

Answer: D

14) Cellulose is ------- made of many -------

A) Carbohydrate/fatty acids
B) Polymer/glucose molecules
C) Lipid/glycerides
D) Protein/amino acids
E) Polypeptides/monomers

Answer: B

15) The monomers of nucleic acids are

A) Purine
B) Pyrimidine
C) Nucleotides
D) Nucleoside diphosphate
E) Nucleosides

Answer: C

16) 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

17) The monomers of nucleic acids are:

A) Nucleoside monophosphate
B) Nucleotides
C) Pyrimidine
D) Nucleoside monophosphate or nucleotides
E) Purine

Answer: D

18) Organic compounds that are composed of carbon, hydrogen and oxygen in a 1:2:1 ratio are called:

A) Fatty acids
B) Sugars
C) Proteins
D) Nucleic acids
E) Nucleosides

Answer: B

19) All of the following can be considered as a polymer except:

A) Pyrimidines
B) Carbohydrates
C) Proteins
D) Nucleic acids
E) RNA

Answer: A

20) All of the following are correct about a polypeptide molecule except:

A) It is a branched polymer
B) Each type has a unique sequence of amino acids
C) Monomers are linked by peptide bonds
D) Formed by dehydration reactions
E) Has polarity with N-terminus and C-terminus

Answer: A

21) Which of the following properties is shared by starch and cellulose?

A) Digested by humans
B) Branched carbohydrates
C) Polymers of glucose
D) None of the options in correct
E) Structural carbohydrates

Answer: C

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

A) None of the options is correct
B) Trioxyglycerol
C) Glycolipids
D) Saturated fatty acids
E) Cholesterol

Answer: E

23) Chromosomes are a complex of DNA, RNA and proteins:

A) False
B) True

Answer: B

24) Nucleotides contain ---------- sugars.

A) Six-carbon
B) Three-carbon
C) Five-carbon
D) Seven-carbon
E) Four-carbon

Answer: C

Chapter 7

25) What technique would be most appropriate to use to observe the movements of condensed chromosomes during cell division?

A) Super-resolution fluorescence microscopy
B) Confocal fluorescence microscopy
C) Transmission electron microscopy
D) Light microscopy
E) Scanning electron microscopy

Answer: A

26) Microtubules control the beating of cilia and flagella which aid in cell motility in some unicellular organisms:

A) False
B) True

Answer: B

27) What types of proteins are not synthesized in the rough ER?

A) Extracellular matrix proteins
B) Plasma membrane proteins
C) Endoplasmic reticulum proteins
D) Mitochondrial proteins
E) Secretion proteins

Answer: D

28) How does DNA differ from RNA?

A) DNA is larger
B) They contain different sugars
C) One of their nitrogenous bases is different
D) None of the options is correct
E) All of the options are correct

Answer: B

29) 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) True
B) False

Answer: B

30) A certain cell has mitochondria, ribosomes, smooth and rough ER, and other parts. It could not be

A) A grasshopper cell
B) A plant cell
C) A bacterium
D) A yeast (fungus) cell
E) A human cell

Answer: C

31) Cytochalasin D is a drug that prevents actin polymerization. A cell treated with cytochalasin D will still be able to contract muscle fibers.

A) False
B) True

Answer: A

32) 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

33) The electron microscope has been 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 pocked together
E) Bacteria are so small

Answer: B

34) You would expect a cell with an extensive Golgi apparatus to

A) Secrete a lot of material
B) Move actively
C) Perform photosynthesis
D) Store large amount of food
E) Make a lot of ATP

Answer: A

35) Which structure is the site of the synthesis of proteins that may be exported from the cell?

A) Golgi vesicles
B) Rough ER
C) Lysosomes
D) Free cytoplasmic ribosomes

Answer: B

36) The maximum magnification in the light microscope is 1000 times:

A) False
B) True

Answer: B

37) A cell with a predominance of free ribosomes is most likely:

A) Enlarging its vacuole
B) Producing primarily cytoplasmic proteins
C) Digesting large food particles
D) Constructing an extensive cell wall
E) Producing primarily proteins for secretion

Answer: B

38) Ions can travel directly from the cytoplasm of one animal cell to the cytoplasm of an adjacent cell through:

A) Tight junctions.
B) Plasmodesmata.
C) Gap junctions.
D) Intermediate filaments.
E) Desmosomes.

Answer: C

39) 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

40) Movement of vesicles within the cell depends on what cellular structure?

A) Actin filaments and microtubules
B) Centrioles and motor proteins
C) Actin filaments and intermediate filaments
D) Actin filaments and ribosomes
E) Microtubules and motor proteins

Answer: E

41) If an individual has abnormal microtubules, then his sperms and skeletal muscles will be affected:

A) True
B) False

Answer: A

42) The extracellular matrix is thought to participate in the regulation of animal cell behaviour by communicating information from the outside to the inside of the cell via integrins.

A) True
B) False

Answer: A

43) Microtubules control the beating of cilia and flagella which aid in cell motility in some unicellular organisms:

A) True
B) False

Answer: A

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

A) True
B) False

Answer: B

Chapter 8

20. An animal cell lacking oligosaccharides on the external surface of its plasma membrane would likely be impaired in which function?

A. Maintaining fluidity of the phospholipid bilayer
B. Attaching to the cytoskeleton
C. Cell-cell recognition
D. Transporting ions against an electrochemical gradient
E. Establishing the diffusion barrier to charged molecules

Answer : C

21. The membranes of winter wheat are able to remain fluid when it is extremely cold by increasing the proportion of glycolipids in the membrane.

True / False

22. ATP hydrolysis is needed in the movement of Na+ ions from a lower concentration in a mammalian cell to a higher concentration in the extracellular fluid.

True/ False

23. Which of the following is a characteristic feature of the carrier proteins in a plasma membrane?

A. They are peripheral proteins
B. They exhibit specificity for a particular type of molecule
C. They do not have any hydrophobic amino acids
D. They work against diffusion
E. They require the use of cellular energy to function

Answer : B

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

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

Answer : E

25. Which of the following would likely move through the lipid bilayer of a plasma membrane most rapidly?

A. Starch
B. An amino acid
C. Glucose
D. CO_2
E. K^+

Answer : D

26. Peripheral proteins are not embedded in the lipid bilayer at all.

True/ False

27. Normal tonicity conditions for typical plant cells is in hypotonic solution.

True/ False

28. Why are lipids and proteins free to move laterally in the membranes?

A. The interior of the membrane is filled with liquid water
B. The interior of the membrane is filled with gelly material
C. Lipids and proteins repulse each other in the membrane
D. Hydrophilic portions of the lipids are in the interior of the membrane
E. There are only weak hydrophobic interactions in the interior of the membrane

Answer : E

29. Which of the following molecules dramatically increases the rate of diffusion of water across cell membranes:

A. The sodium -potassium pump
B. Gated ion channels
C. Aquaporins
D. ATP
E. Proton pump

Answer : C

30. Which component is a protein fiber of the extracellular matrix:

A. Glycolipid molecules
B. Microfilaments
C. Integral proteins
D. Transmembrane proteins
E. Collagen

Answer : E

31. Integral membrane proteins lack hydrophilic domains.

True / False

32. For a protein to be an integral membrane protein, it would have to be amphipathic.

True/ False

33. Distilled water was transferred to a patient directly into his vein. What will be the most probable result of his transfusion? The patient's red blood cells will:

A. Shrivel up
B. Have no unfavorable effect as long as the water is free of viruses and bacteria
C. Not be affected
D. Swell
E. Plasmolyze

Answer : D

34. In the cotransport of glucose and sodium ions into the cell, a substance that blocks sodium ions would also block glucose transport.

True/ False

35. Chloride ion channels are membrane structures that include:

A. Aquaporins
B. Sodium ions
C. Hydrophillic corridor
D. Carbohydrates
E. Gap junctions

Answer : C

36. Which of the following is a cotransporter:

A. Na+/ K+ pump
B. H+ /sucrose transport protein
C. Proton pump
D. Chloride ion channel
E. Sodium and potassium ion channels

Answer : B

37. Bulk transport in eukaryotic cells such as receptor mediated endocytosis does not require energy.

True/ False

38. The double bonds form kinks in the fatty acid tails , preventing adjacent lipids from packing tightly, keeping a membrane more fluid at lower temperatures.

True/ False

39. Plants use a contrasport protein to load sucrose produced by photosynthesis into specialized cells in the veins of leaves.

True/ False

First 018 & 019

Chapter(3):The chemistry of water

1) The specific heat of water is :

   A.5 Cal per g per C
   B.2 Cal per g per C
   C.3 Cal per g per C
   D.1 Cal per g per C

2) The specific heat of water is

   A.High
   B.Low
   C.Moderate
   D.None of above

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

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

4) Each water molecules can form hydrogen bond with other ———molecules

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

5) Ice floats above liquid water because

   A.Ice is less dense than water
   B.Liquid water is less dense than water
   C.Both of liquid water and ice have same density
   D.A+C
   E.None of the above

6) some evaporation can occur at———-

   A.High temperature
   B.Low temperature
   C.Any temperature
   D.At 100C
   E.None of the above

7) Describe water's heat of vaporization

A.High
B.Low
C.Moderate
D.It has none
E.All of the above

8) when water vaporizes , which of the following bonds must be broken

A.Ionic
B.Polar covalent
C.Hydrogen bond
D.Hydrophobic
E.None of the above

9) which the following is not property of liquid water

A.Ice has a lower density than liquid water
B.Liquid water has high surface tension
C.Can form hydrogen bond with other water molecules
D.Has low specific heat
E.None of the above

10) Most important reason for unusual properties of water is

A.The covalent bonding pattern-in water molecules
B.The bond angle between two hydrogen atoms in the molecule
C.Hydrogen bonding between water molecules
D.None of the above
E.All of the above

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

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

12) In aqueous solution , the solvent is ——-

A.Water chloroform

B.Ether
C.All of the above
D.None of the above

13) which of the following classified as hydrophilic molecules but cannot dissolve in water

A.Cellulose
B.Cotton
C.Oil
D.Salt
E.A+ B

14) Which of the following helps in the transporting of water against gravity

A.Cohesion
B.Adhesion
C.Evaporation
D.Condensation
E.All of them except D

15) Hydration shell can be form around

A.Ion
B.Sugar
C.Oil
D.Glucose
E.All of them except C

16) which of the following is true about electronegativity of oxygen and hydrogen

A.Hydrogen is more electronegative than oxygen
B.Oxygen is more electronegative than hydrogen
C.Oxygen and hydrogen have the same electro negativity

17) which the following is hydrophobic material

A.Paper
B.Salt
C.Wax
D.Sugar
E.Pasta

18) Transformation of material from liquid to gaseous state is known as

A.Evaporation
B.Vaporization

C.Boiling
D.Condensation
E.A+B

19) 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

20) 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

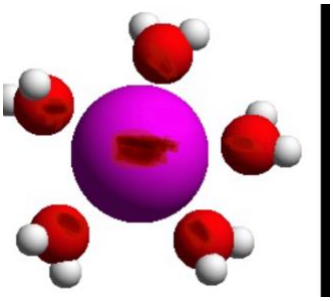
21) Hydrogen bond is
Attraction between hydrogen and electronegative atom

22) What is specific heat

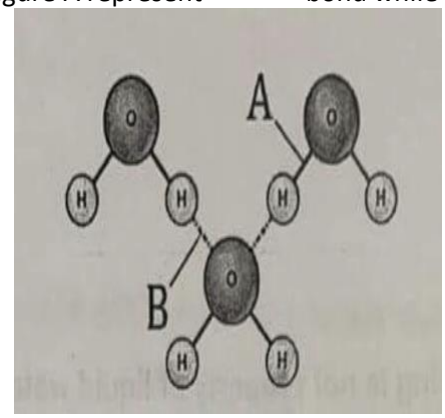
A.The temperature it takes to raise 1g of a substance by 1 degree C
B.The temperature it takes to raise 1g of a substance by 1 degree F
C.The temperature in Celsius to boil 1g of substance at boiling point

23) Based on your knowledge of the polarity of water molecules, the solute molecules depicted here is most likely.

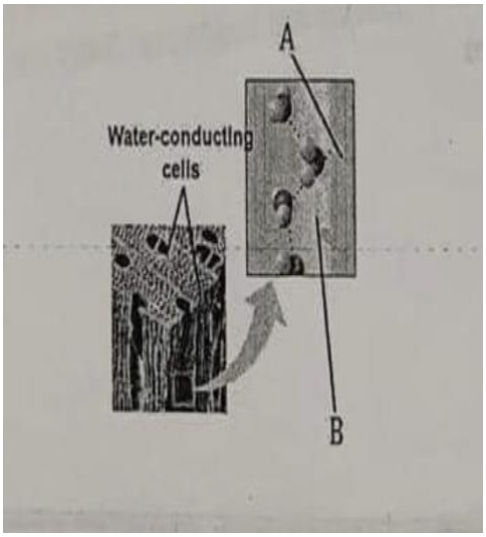
A.Positively charged
B.Negatively charged
C.Whiteout charged
D.None polar



24) According to the figure A represent ———- bond while B represent ———bond



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



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

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

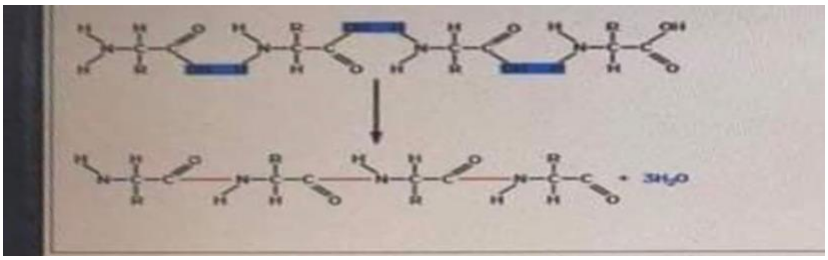
Answers

1. D) 1 cal per g per C
2. A)High
3. A)Hydration shell
4. A)4
5. A)Ice is less dense than water
6. C)At any temperature
7. A)High
8. C)Hydrogen bond
9. D)Has low specific heat
10. C)Hydrogen bonding between water molecules
11. B)High specific heat
12. A)Water
13. E)B+ A
14. E)All of them except D
15. E)All of them except C
16. B)Oxygen is more electronegative than hydrogen
17. C)Wax
18. E)A+B
19. E)All of the listed responses are correct
20. B)Two negative charges
21. Answered
22. A.The temperature it takes to raise 1g of a substance by 1 degree C
23. Positively charged
24. A)polar. B)hydrogen bond
25. A) Adhesion. B)Cohesion
26. B)Hydrogen bonds **

"نشق الدروب إليك يا رب، موقنين أنها خضراء نضرة، راجيين أن تحصد أقدامنا حبك وقبولك، آملين.
ألَّا يمسنا نصب ولا تقل عزيمتنا "

Chapter (5): Biological macromolecules

1. What are formed in the reaction shown



A. Ester bond
B. Peptide bond
C. hydrogen bond
D. ionic bond

2. Sulfur can be found in:

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

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

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

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

5. Insoluble fibers is

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

6. Disulfide bridge can stabilize _____structure of protein

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

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

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

8. Which of the following doesn't contain true polymer?

A. Protein
B. Carbs
C. Lipids
D. DNA
E. RNA

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

10. How many water molecules needed to hydrolyze a polymer made of 4 monomers

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

11. In order to synthesize one fat molecule, the dehydration reaction needs remove_____ water molecules

A. 3
B. 4
C. 5
D. 6

12. 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

13. Which of the following is “Storage carbs in plant

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

14. Enzymes are usually_____

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

15. Animals store glucose in the form of which macromolecule

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

16. 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

17. Which of the following is mismatched

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

18. 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

19. The minimum number of carbons in monosaccharide is

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

20. 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

21. 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

22. The different chemical and physical properties of amino acid depends on

A. Carboxyl group
B. Amino group
C. Side chain
D. Alpha Carbon

23. 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

24. Cholesterol is a

A. Triglyceride
B. Phospholipid
C. Steroid
D. Proteins
E. All of the above

25. Which of the following isn't a disaccharide

A. Sucrose
B. Maltose
C. Lactose
D. Amylose

26. Which of the following is hydrophobic

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

27. Which the following is true about saturated fats?

A. It contains unsaturated fatty acid with double bond
B. It contains saturated fatty acid with no kinks
C. It is sold at room temperature
E. All of them are correct except A

28.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

29. 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

30. Misfolded protein involved in:

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

31. which of the following found only in RNA:

A. Ribose sugar and adenine
B. Deoxyribose sugar and uracil
C. Ribose sugar and uracil
D. Ribose sugar and guanine
E. Any of the above

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

A. A steroid
B. Cellulose
C. DNA
D. An enzyme
E. A contractile protein

33. The bonding of two amino acid molecules to form larger molecule requires:

A. The release of water molecule
B. The release carbon dioxide molecule
C. The addition of nitrogen atom
D. The addition of water molecule
E. The release of nitrogen dioxide molecule

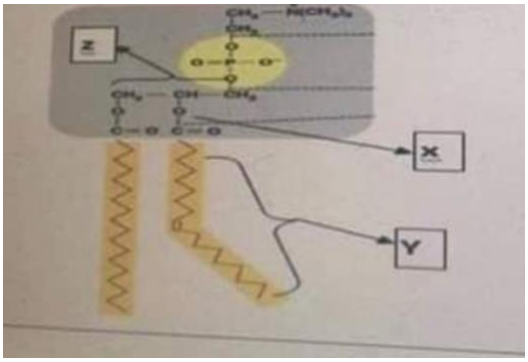
34. Which of the following is false about cellulose?

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

35. Which of the following not polymer

A. Steroid
B. Starch
C. Cellulose
D. Chitin

36. The bond at (X) is described as_____ bond



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

37. Which of the following nitrogenous bases is purine

A. C and G
B. A and G
C. U and T

38. What type of macromolecule carries out catalysis in biological systems

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

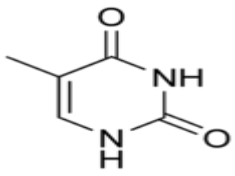
39. What are the most diverse macromolecule in the cell

A. Lipid
B. Mineral salts
C. Proteins
D. Carbs

40. 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

41. The figure represents



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

42. 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

43. Which of these molecules is not formed by dehydration reaction ?

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

44. Which of these classes of biological molecule consist of both small molecules and macromolecules polymers ?

A. Lipids
B. Carbohydrates
C. Protein
D. Nucleic acid
E. Lipids, carbohydrates, protein and nucleic acid all consist of only macromolecular polymer

45. Which of the following is not a polymer ?

A. Glucose
B. Starch
C. Cellulose
D. Chitin
E. DNA

46. 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)

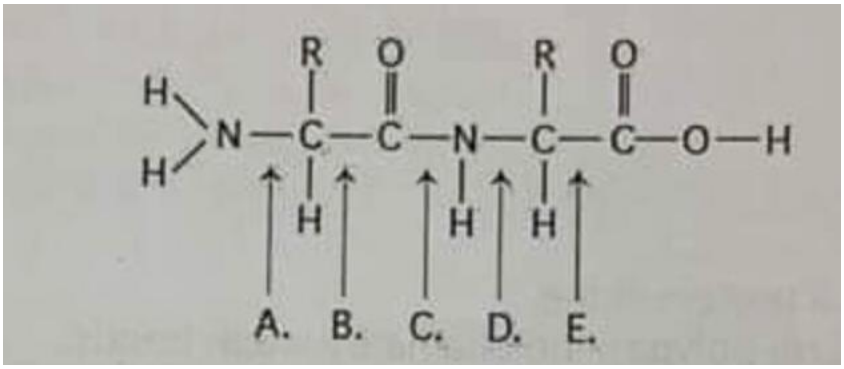
47. Which of the following categories includes all other in the list?

A. Disaccharide
B. Polysaccharide
C. Starch
D. Carbohydrate

48. Which is the chemical reaction mechanism by which cell make polymer from monomers ?

A. Phosphodiester linkages
B. Hydrolysis
C. Dehydration reaction
D. Ionic bonding of monomers
E. The formation of disulfide bridges between monomers

49. According to the figure



A) Which bond is peptide bond?

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

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

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

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

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

50. 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

51. Which of the following is best summarizes the relationship between dehydration reaction and hydrolysis ?

A. Dehydration reaction assemble polymers, and hydrolysis reaction break down polymers
B. Dehydration reaction eliminate water from lipid membranes, and hydrolysis make lipid membranes water permeable
C. Dehydration reaction can occur only after hydrolysis
D. Hydrolysis creates monomers, and dehydration reaction break down polymers
E. Dehydration reaction ionize water molecules and add hydroxyl group to polymers; hydrolysis reaction release hydroxyl group from polymers

52. Lactose, a sugar in milk, is composed of one glucose molecule joined by a glycosidic linkage to one galactose molecule. How is lactose classified?

A. As a pentose
B. As a hexose
C. as a monosaccharide
D. As a disaccharide
E. As a polysaccharide

53. Human sex hormone can be classified as

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

54.The simplest amino acid is

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

55. which of the following is true of both starch and cellulose ?

A. They are both polymers of glucose
B. They are cis-trans isomers of each other
C. They can both be digested by humans
D. They are both used for energy storage in plants
E. They are both structural components of the plant cell wall

56. which of the following statements is true for the class of biological molecules known as lipids?

A. They are insoluble in water
B. They are made from glycerol, fatty acid, phosphate
C. They contain less energy than proteins and carbohydrates
D. They are made by dehydration reaction
E. They contain nitrogen

57. when protein lose its native shape it called:

A. Denaturation
B. Renaturation
C. Destruction
D. Deformation
E. None of the above

58. Phospholipids contain：

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

59. 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 a carbon
D. Different asymmetric carbons

60. Upon chemical analysis, a particular polypeptide was found to contain 100 amino acids, how many peptide bonds are present in this protein

A. 100
B. 101
C. 99
D. 98
E. 97

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

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

62. which of the following polymers contain nitrogen ?

A. Starch
B. Glycogen
C. Cellulose
D. Chitin
E. Amylopectin

63. a molecule with the chemical formula C6H12O6 is probably a:

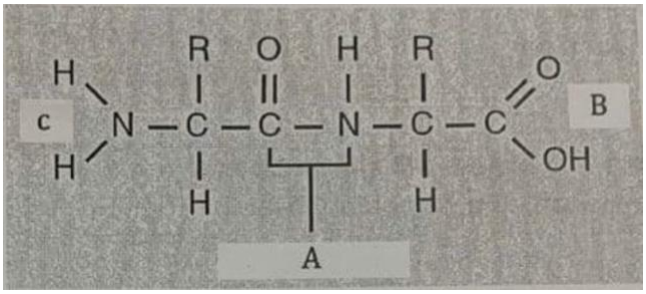
A. Carbohydrate
B. Lipid
C. Monosaccharide
D. Carbohydrate and lipid only
E. Carbohydrate and monosaccharide only

64. The molecular formula for glucose is C6H12O6. What would be the molecular formula for a polymer made by linking 10 glucose by dehydration reaction (CHO)

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

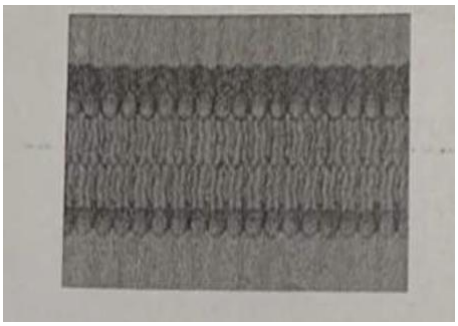
بنضرب صيغة الغلوكوز ب ١٠ بعدها بنطرح ٩ جزيئات ماء

65.



A: A represent—-——— bond
B: B represent—————
C: C represent ——————-

66.The figure shows

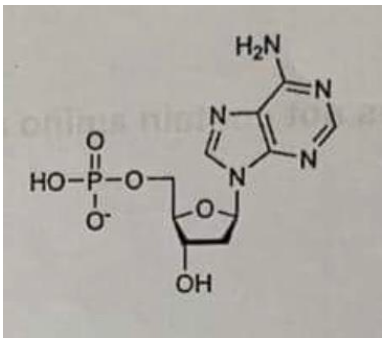


A. Phospholipid bilayer
B. The structure of cell membrane
C. Unsaturated fats
D. Cholesterols
E. A+B

67.The figure shows

A.RNA 3d shape
B. Collagen
C. Cellulose
D. DNA

68. The figure represents



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

69. Which of the following pairs of base form normal double helix of DNA

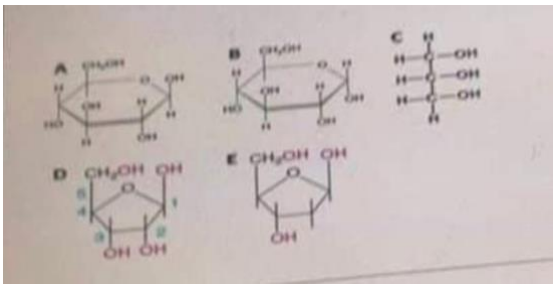
A. 5'-AGCT-3' with 5'-TCGA-3'
B. 5'-GCGC-3' with 5'-TATA-3'
C. 5'-ATGC-3' with 5'-GCAT-3'
D. All of the above are correct

70. 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 92. 41

71. Which of the molecules shown in the figure is the monomer of cellulose

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



72. The tertiary structure of protein is the
Unique 3d shape of the fully folded polypeptide

73. RNA molecules can find as a 3D shape due to：
A. Hydrogen bonds between complementary base pairing

Answers

1. B
2. A
3. E
4. D
5. B
6. C
7. D
8. C
9. B
10. B
11. A
12. A
13. A
14. E
15. B
16. E
17. D
18. D
19. C
20. C
21. D
22. C
23. A
24. C
25. D
26. E
27. E
28. D
29. E
30. E
31. C
32. A
33. A
34. E
35. A
36. B
37. B
38. A
39. C
40. B
41. B
42. E
43. A
44. B
45. A
46. E

47. D
48. C
49. A) C B) A C) C
50. C
51. A
52. D
53. D
54. A
55. A
56. A
57. A
58. E
59. C
60. C
61. C
62. D
63. E
64. C
65. A: Peptide bond
    B: C terminus
    C: N terminus
66. E
67. B
68. A
69. C
70. E
71. A

Chapter 7

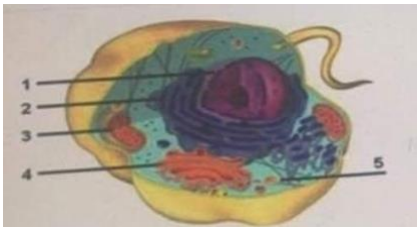
A) Which of the following pairs would be separated by different configurations?

A) Ribosomes , Mitochondria
B) Na+ , K+
C) Cl- , H2PO4-
D) Amino Acids , glucose
E) None of the above

B) Viruses can be seen by

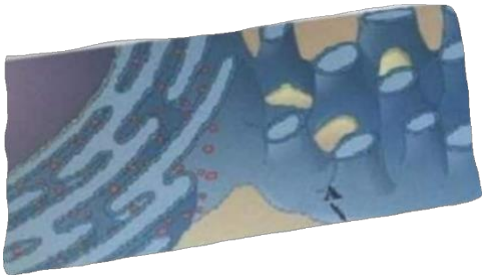
A) Compound microscope
B) Dissecting microscope
C) Electron microscope
D) Unaided eye
E) A,B and C

C) Which organelle is responsible for the production of membrane proteins?



A) 1
B) 2
C) 3
D) 4
E) 5

D) 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

E) 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 pectins
D) made of cellulose
E) B&C are correct

F) 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

G) Large organisms do not generally have larger cells than small organisms, but simply have more cells, because

A) Smaller cells have greater surface area to volume ratio
B) Smaller cells have smaller surface area to volume ratio
C) Diffusion cannot occur in large cells
D) Large cells have fewer metabolic reactions
E) Small cells move faster than large cells

1)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

2)Which of the following possesses a micro tubular structure similar to a basal body?

A) Centrioles
B) Lysosome
C) Nucleolus
D) Peroxisomes
E) Ribosome

3) Which statement correctly characterises bound ribosomes?

A) Bound ribosomes are enclosed in their own membrane.
B) Bound and free ribosomes are structurally different
C) Bound ribosomes generally synthesise 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.

4) 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

5)Which is one of the main energy transformers of cells?

A) Lysosome
B) Vacuole
C) Mitochondrion
D) Golgi apparatus
E) Peroxisomes

6) Which of the following contains its own DNA and ribosomes?

A) Lysosome
B) Vacuole
C) Mitochondrion
D) Golgi apparatus
E) Peroxisomes

7) 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.

8)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.

9) 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

10) 49)Which of the following produces and modifies polysaccharides that will be secreted?

A) Lysosome
B) Vacuole
C) Mitochondrion
D) Golgi apparatus
E) Peroxisomes

11) Which type of organelle is primarily involved in the synthesis of oils, phospholipids, and steroids?

A) Ribosome
B) Lysosome
C) Smooth endoplasmic reticulum
D) Mitochondrion
E) Contractile vacuole

12) Which of the following contains hydrolytic enzymes?

A) Lysosomes

B) Vacuole
C) Mitochondrion
D) Golgi apparatus
E) Peroxisomes

13) Which of the following are capable of converting light energy to chemical energy?

A) Chloroplasts
8) Mitochondria
C) Leucoplasts
D) Peroxisomes
E) Golgi bodies

14) Which of the following is a function of cell wall?

A) Prevent excessive uptake of the water
B) Protection
C) Maintain the cell shape
D) Holding plant against gravity
E) All of the above

15) 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

16) ---------- is a framework of protein fibres extending throughout the nuclear interior

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

17) 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

18) The main function of cell fractionation?

- Separation of major organelles and sub-cellular components

19) Which of the following is not a function of cytoskeleton?

A) Transporting of molecules into the cell
B) Transporting of molecules within the cell
C) Providing structure and shape
D) Anchoring the cell
E) Cell movement

20) Which of the following organelles is absent in plant cells?

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

21) Grana and thylakoid can be found in:

A) Mitochondria
B) Chloroplasts
C) Golgi
D) Rough ER
E) Peroxisomes

22) All of the following is found in prokaryotic cells except

A) DNA
B) Chromosomes
C) Ribosomes
D) Cytosol
E) Nuclear envelope

23) Which of the following organelles responsible of proteins synthesis

A) Ribosomes
B) Lysosomes
C) Mitochondria
D) Microtubule
E) Nucleus

24) Large number of ribosomes can be found in cells that produce:

A) Proteins
B) Carbohydrate
C) Lipids
D) DNA
E) RNA

25) 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

26) Ribosomes can be seen by:

A) Light microscope
B) Electron microscope
C) Unaided eye
D) None of the above
E) All of the above

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 call wall or extracellular matrix
D) A cell that is digesting food particles
E) A cell that is enlarging its vacuole

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

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

29) Microtubules are not involved in?

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

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

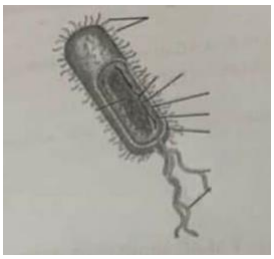
31) The nuclear envelope is directly connect to:

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

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

33) The figure represents:



A) Prokaryote
B) Eukaryote

C) Animal cell
D) Plant cell
E) Protists

34) Which oF the following is a function of the smooth ER?

A) Detoxification of drugs
B) Storage of calcium Ions
C) Synthesis of llpIds
D) Synthesis of Glycoproteins and secretory proteins
E) All of them except (D)

35) The organelle that can carry out (Autophagy process) Is:

A) Golgi
B) ER
C) Nucleus
D) Mitochondria
E) Lysosomes

36) 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

37) 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

38) 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

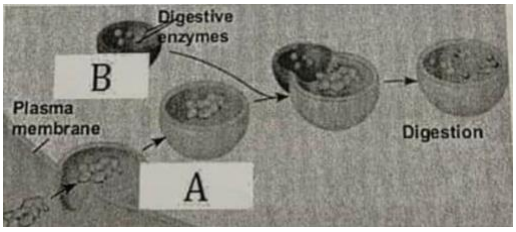
39) Cell wall can be found :

A) Plant cells only
B) Animal cells only
C) In both animal and plant cells
D) In plant cells and some prokaryote
E) Any of the above

40) Which of the following is correct?

A) Larger organisms have larger cells
B) Larger organisms have more cells
C) Surface area to volume ratio is large in smaller cells
D) Surface area to volume ratio is small in smaller cells
E) Both B and C are correct

41) According to the figure , (A) represent:



A) Lysosome
B) Food vacuole
C) Contractile vacuole
D) Peroxisomes

42) 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)

43) Which of the following is a compartment that often takes up much of the volume of a plant cell

A) Lysosome
B) Vacuole
C) Mitochondrion
D) Golgi apparatus
E) Peroxisomes

ANSWERS

A. A
B. C
C. B
D. E
E. E
F. D
G. A

1) D
2) A
3) C
4) C
5) C
6) C
7) D
8) A
9) B
10) D
11) C
12) A
13) A
14) E
15) D
16) B
17) C
18) …
19) A
20) E
21) B
22) E
23) A
24) A
25) A
26) B
27) B
28) B
29) E
30) E
31) A
32) B
33) A
34) E
35) E

36) C
37) B
38) D
39) D
40) E
41) B
42) E
43) B

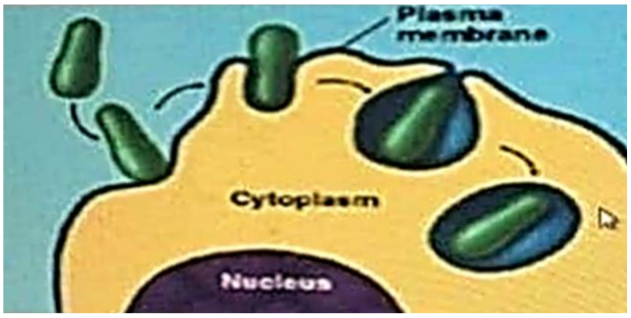
ولله الحمد حتى يرضى

نَعوذُ بكَ مِن ذبولِ السَّعيِ في مُنتَصف الطَريق ... ونعوذُ بكَ مِن انطفاءةِ الرّوحِ ؛ بِخَفيّ الذُّنوب !

قال تعالى: {وَفِي الْأَرْضِ آيَاتٌ لِلْمُوقِنِينَ * وَفِي أَنْفُسِكُمْ أَفَلَا تُبْصِرُونَ * وَفِي السَّمَاءِ رِزْقُكُمْ وَمَا تُوعَدُونَ * فَوَرَبِّ السَّمَاءِ وَالْأَرْضِ إِنَّهُ لَحَقٌّ مِثْلَ مَا أَنَّكُمْ تَنْطِقُونَ} [سورة الذاريات : 20-23]

CHAPTER 8

1. This prosses in the figure demonstrates



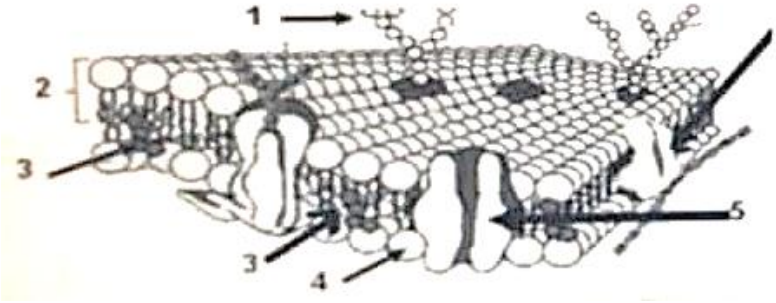
   a) Pinocytosis
   b) Phagocytosis
   c) Receptor-mediated endocytosis
   d) Photosynthesis
   e) contractile vacuole active transport

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

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

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

5. Which structure can function as aquaporin?



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

6. 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

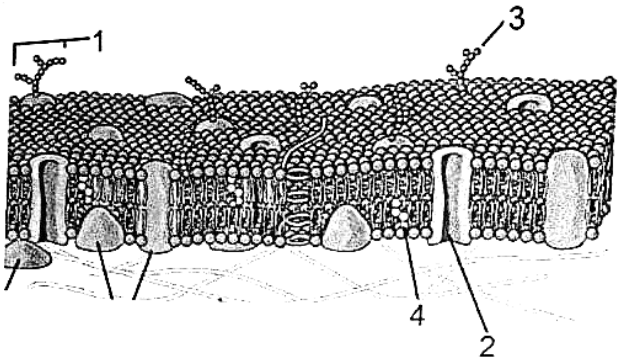
7. Which of the following types of molecules are the major structural components of the cell membrane?
   a) Phospholipids and cellulose
   b) Nucleic acids and proteins
   c) Phospholipids and proteins
   d) Proteins and cellulose
   e) Glycoproteins and cholesterol

8. 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

9. 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

10. Water passes quickly through cell membrane because:
   a) It is small polar molecule
   b) Its movement is driven by ATP hydrolysis
   c) It moves through aquaporins
   d) The membrane bilayer is hydrophilic
   e) The membrane interior is hydrophobic

11. Which structure can function as aquaporin?



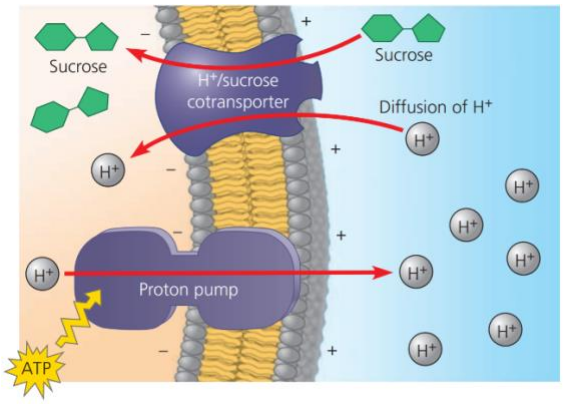
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above

12. 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.

13. 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

14. 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

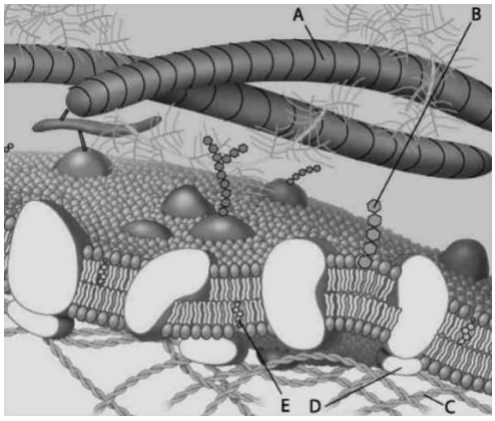
15. In the figure shown, a proton passes to the cytosol:



    a) Down its concentration gradient
    b) By simple diffusion
    c) Against its concentration gradient
    d) Down its electrochemical gradient
    e) None of the above

16. What is the voltage across a membrane called?
    a) Water potential
    b) Chemical gradient
    c) Membrane potential
    d) Osmotic potential
    e) Electrochemical gradient

According to the figure below, answer questions 17, 18 and 19:



17. Which component is the peripheral protein?
    a) A
    b) B
    c) C
    d) D
    e) E

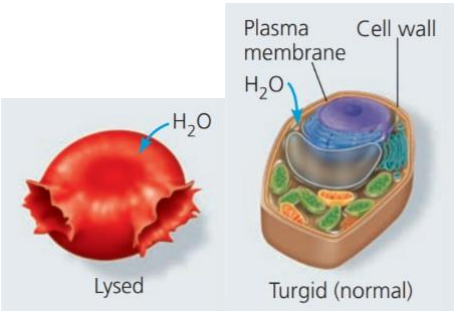
18. Which component is cholesterol?
    a) A
    b) B
    c) C
    d) D
    e) E

19. Which component is a glycolipid?
    a) A
    b) B
    c) C
    d) D
    e) E

20. Fluid mosaic model of the membrane proposed that
    a) Membranes are a phospholipid bilayer
    b) Membranes are a phospholipid bilayer between two layers of hydrophilic proteins
    c) Membranes are a single layer of phospholipids and proteins
    d) Membranes consist of protein molecules embedded in a fluid bilayer of phospholipids
    e) Membranes consist of a mosaic of polysaccharides and proteins

21. 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

22. 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

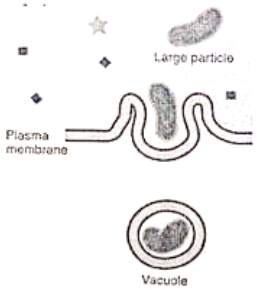
23. Which of the following is true about sodium potassium pump?
    a) It can pump 3 sodium ions out of the cell
    b) It can pump 2 potassium ions into the cell
    c) The pump powered by ATP
    d) The process is an active transport
    e) All of the above are true

24. “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

كن ابن من شئْتَ واكتسبْ أدباً .. يغنيك محموده عن النَّسبِ

إنَّ الفتى من يقولُ ها أنا ذا .. ليسَ الفتى من يقول كانَ أبي

25. The figure shows:



a) Phagocytosis
b) Pinocytosis
c) Receptor mediated endocytosis
d) Exocytosis
e) Facilitated diffusion

26. Ions diffuse across membranes through specific ion channels
a) Down their chemical gradients
b) Down their concentration gradients
c) Down the electrical gradients
d) Down their electrochemical gradients
e) Down the osmotic potential gradients

27. Water enters and leaves plant and animal cells by:
a) Pinocytosis
b) Simple diffusion
c) Osmosis
d) Co-transport
e) Bulk transport

28. Low density lipoproteins (LDL) enter cells by:
a) Pinocytosis
b) Phagocytosis
c) Active transport
d) Receptor mediated endocytosis
e) Passive transport

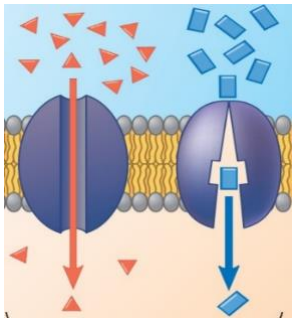
29. Nonpolar small hydrocarbons, CO_2, and O_2 cross the membrane by:
a) Simple diffusion
b) Active transport
c) Facilitated diffusion

d) Bulk transport
e) Co-transport

30. When plant cells are placed in hypertonic solution, they will
a) Lyse
b) Be turgid
c) Plasmolyze
d) Shrink
e) Be flaccid

31. The secretion of substances out of the cell through small vesicles is an example of:
a) Exocytosis
b) Pinocytosis
c) Endocytosis
d) Osmoregulation
e) Phagocytosis

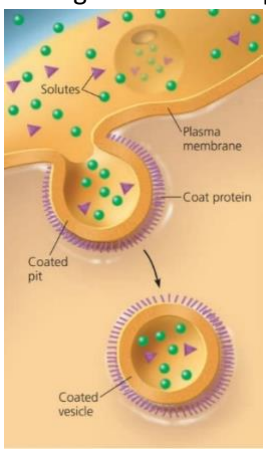
32. The figure shows:



a) Co-transport
b) Osmosis
c) Ion pump
d) Facilitated diffusion
e) Phagocytosis

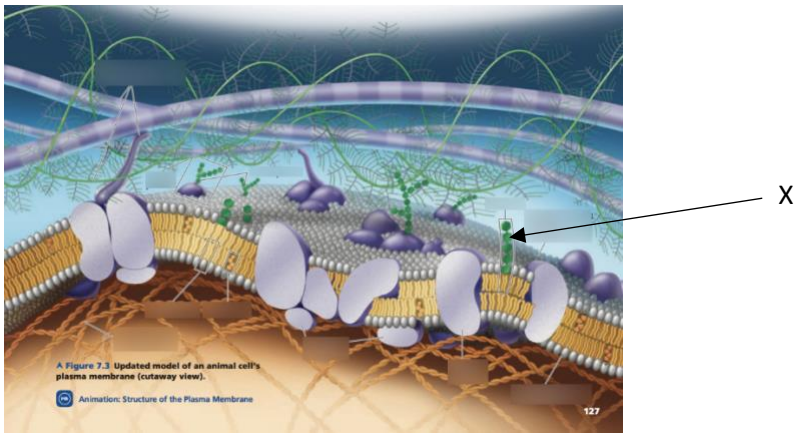
33. Channel proteins are required for:
a) Osmosis
b) Facilitated diffusion
c) Active transport
d) Phagocytosis
e) A and B are correct

34. This figure shows the prosses of:



a) Exocytosis
b) Phagocytosis
c) Pinocytosis
d) Receptor mediated endocytosis
e) Osmosis

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



a) Carbohydrate
b) Cholesterol
c) Phospholipid
d) Collagen fiber
e) Fatty acid

36. 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

37. 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

ANSWERS

1	b	**14**	b	**27**	c
2	d	**15**	a	**28**	d
3	e	**16**	c	**29**	a
4	e	**17**	d	**30**	c
5	e	**18**	e	**31**	a
6	c	**19**	b	**32**	d
7	c	**20**	d	**33**	e
8	c	**21**	b	**34**	c
9	e	**22**	b	**35**	a
10	c	**23**	e	**36**	e
11	b	**24**	e	**37**	b
12	d	**25**	a		
13	a	**26**	d		

تلمّح فجر الأجر يَهُن ظلام التكليف
-ابن الجوزي-