

First 023

1- Some "muscle tears" involve the rupture of:

- A- tight junctions
- B- desmosomes
- C- gap junctions

2- Which of the following is false about unsaturated fats:

- A- contains a double bond
- B- could be attached to glycerol to form a fatty acid
- C- exist in plants oils
- D- liquid in room temperature
- E- present in animals like cows

3- Which of the following contains an ester bond:

- A- DNA
- B- RNA
- C- Fats
- D- DNA & RNA
- E- DNA, RNA and fats

4- All of the following is carbohydrate except:

- A- glucose
- B- fructose
- C- glycine

5- Rough ER consists of continuous membranes and sacs called:

- A- cristae
- B- cisternae

6- Animal cells could not convert light energy to chemical energy because it lacks:

- A- mitochondria
- B- chloroplast

7- Responsible of energy conversion:

Ans: mitochondria and chloroplasts

8- A type of junctions that prevent flow of fluid between cells in epithelial tissue:

A- gap junctions

B- tight junctions

C- desmosomes

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

Ans : D

10- Which of the following act as (Fluidity buffer)?

A. Phospholipids

B. Proteins

C. Cholesterol

D. Glycoproteins

E. Glycolipids

11- If a plant cell with 5% salt concentration, is in 12% salt concentration aqueous solution, what will happen?

Answer: H₂O moves out of the cell, resulting plasmolysis

12- The type of junction that can be seen between heart (Cardiac muscle) is:

A. Tight junction

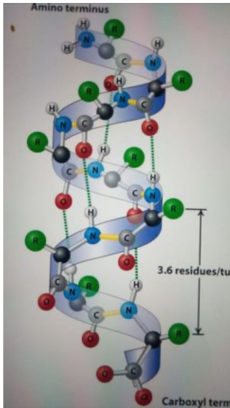
B. Gap junction

C. Desmosomes

D. Plasmodesmata

E. None of the above

13- What is this ..?



Ans: a helix

14- Ribosomal RNA synthesized in?

- A. ribosom
- B. nucleolus
- C. rough ER

Ans : A

15. Function like rivets fasting cells together into strong sheets?

- A. gap junction
- B. desmosomes
- C. tight junction
- D. plasmodesmata

Ans : B

16. Adjacent in heart muscle and animal embryos?

- A.gap junction
- B.desmosomes
- C.tight junction
- D.plasmodesmata

Ans: A

17)Protein subunits is tubulin?

Ans : Microtubules

18)Which organelle is found in both animal and plant cells

- A cell wall
- B centriole
- C peroxisome
- D central vacuole
- E chloroplasts

19. Number of water molecules that need to hydrolysis polymers consists of four monomers..

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

Ans: B

20 . What is the microscope used to see proteins?

- A.Brightfied specimen
- B.Fluorescence
- C.Phase contrast
- D.Deconvolution
- E.electron microscope

21) Which of the amino acids has net negative charge at cell pH 7.3 ?

- A . glutamic acid
- B . lysine
- C . asparagine
- D . proline

Ans: A

22) Vertebrates sex hormones are

- A. steroids
- B. protein
- C. fats

Ans: A

23) Which process is passive transport with aid of proteins?

- A. osmosis
- B. facilitated osmosis
- C. facilitated diffusion
- D. active transport

Ans : c

24) Infoldings in the inner mitochondria membrane are called:

- A) Cristae
- B) Cisternae
- C) Stroma
- D) Thylakoid
- E) Chloroplast

25) Fiber from substance hydrophilic but insoluble..

- A) Amylose
- B) Amylopectin
- C) Strach
- E) Cellulose

Ans: Cellulose

26) Where is the DNA in animal cells located?

- A) mitochondria and nucleus only
- B) nucleus only
- C) nucleus and mitochondria and ER
- D) ER only
- E) non of the above

Ans. A

27) Which of the following contains cisternae ?

- A. Rough ER
- B. mitochondria
- C. Golgi apparatus
- D. Only A and C
- E. All of them

28) Integral protein:

- A) a membranous proteins
- B) penetrates the hydrophobic interior of membrane
- C) consists hydrophobic parts which contains non polar amino acids
- D) consists hydrophobic parts that coils in alpha helices
- E) all of mentioned is correct

29. DNA and RNA ..?

- are polymers
- are not macromolecules
- consist of the same 4 nitrogenous bases
- contain hexosugars

30. Which of the following is not a component of nucleotide?

- Ribose
- phosphate group
- Riboluse
- nitrogen base

31. In aqueous solution, the solvent is:

- any polar solvent
- Water
- methanol

32. Which of the following break fatty acids to sugars in fatty tissues in plants

- mitochondria
- chloroplast
- Glyoxisome

33. Which of the following mismatch

- smooth ER - calcium storage
- peroxisome- a part of the endomembrane system
- Ribosomes- synthesis of proteins
- lysosomes- Autophagy
- Microfilament —movement of chromosomes in cell division

34. Hydrolytic enzymes in lysosomes are synthesized in...?

- lysosomes
 - ribosomes
- (ER was not one of the choices)

35. Cellulose:

- a structural polysaccharide
- a primary component of plant cell walls
- not branched
- hydrophilic water-insoluble
- all of mentioned are correct

36. Water is good solvent for all the following except:

- olive oil
- sucrose
- fructose
- ionic compound

37. Interaction between water and water conducting cells is called:

-cohesion

-adhesion

38. Which statement is FALSE about polypeptide:

-a branched polymer

-contains peptide bonds

-differ in sequence of amino acids

-dehydration reaction

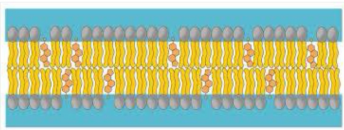
39. In sickle anemia , valine in hemoglobin is substituted for :

Glutamine

Glutamic acid

Glycine

40. Which of the following membrane components NOT in plant cell membrane ...!



Ans : cholesterol

41) hydrogen bonds ONLY are primarily responsible for holding together the secondary structure of proteins. This sentence is true or false.

42. peroxisome are not from endomembrane system .. This sentence is true or false.

43)water have highest density at!

Ans - Water indeed has its maximum density at approximately 4 degrees Celsius

44) Which of the following is not polysaccharide ?

Ans: Glycine

45) which of the following is property of water due to hydrogen bonds

- A. Cohesion
- B. Adhesion
- C. High surface tension
- D. All of the above

46) CO₂ can pass through phospholipid as it is nonpolar .. This sentence is true or false.

47) water passes through phospholipid bilayer quickly by ..

Ans : aquaporins

48) which of the following are hollow tubes .

Ans : Microtubules

46) what happened to plant cell when placed in hypotonic solution ?

Ans : will become turgid

48) cells Adhere to each other including intermediate filaments , which type of junction?

Ans: Desmosomes

49) cells sealing to each other , which type of junction?

Ans: Tight junction

50) what is difference in DNA and RNA ?

Ans : Is that DNA contain thymine and deoxyribose sugar

51. in aqueous solution the solvent is ..

Ans : water

52 - lysosome work in ...

Ans : acidic conditions

53- fructose are joined by ...

Ans : 1-2 glycosidic bond

54. Triglycerides contain ..

Ans: three fatty acid and one glycerol molecule

55- sickle cell anemia affect ..

Ans : Hemoglobin

56. prokaryotes don't have ...

Ans: nuclear envelope

First Term 2022

Q1- the difference between RNA and DNA that DNA is :

Ans : deoxyribose sugar and RNA is ribose sugar

Q2- which of the following isn't in endomembrane system :

A)nuclear envelope

B)Golgi apparatus

C)lysosome

D)mitochondria

E)ER

Q3- which of the following is the site of cellular respiration :

Ans : Mitochondria

Q4- water can pass the plasma membrane because

Ans : water is hydrophilic

Q5- which of the following is responsible for synthesis the ribosomes

A)nuclear envelope

B)Golgi apparatus

C)nucleolus

Endoplasmic reticulum

D)A and B

E)none of the above

Q6- which of the following is responsible of manufacturing certain macromolecules such as pectin

A)metochondria

B)Golgi apparatus

C)plasma membrane

D)nuclear envelope

E)Ribosomes

Q7- A Hollow tubes is the shape of

- A)microfilaments
- B)Intermediate filaments
- C)microtubules
- D)integrins
- E)collagen

Q8 - the function of plasmodesmata is similar to

- A) Desmosomes
- B)tight junction
- C)Gap junction
- D)Fibronectin
- E)none of the above

Q9- which from the following is not a type of carbohydrates

- A)glucose
- B)fructose
- C)glycine
- D)sucrose
- E)maltose

Q10- ovalbumin is an example for a

- A)transport protein
- B)hermonal protein
- C)storage protein
- D)receptor protein
- E)none of the above

Q11 - Adhesion and cohesion are result of

- A) hydrogen bond
- B)covalent bond
- C)surface tension
- D)A and C are correct

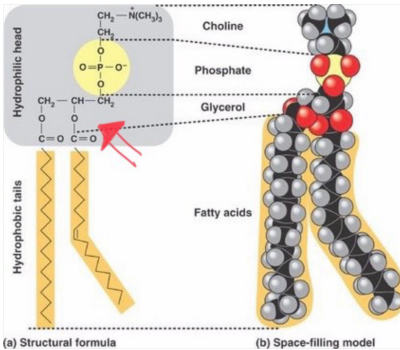
Q12- ATP and carrier protein are connect to ...

- A) active transport
- B) passive transport
- C) phagocytosis
- D) B and C
- E) A and C

Q13- the sequence of amino acid of polypeptide chain can be called..

- A) primary structure
- B) secondary structure
- C) tertiary structure
- D) Quaternary structure
- E) all the above are correct

Q14- Determine the type of bond below



- A) ester
- B) phosphodiester
- C) glycosidic linkage
- D) peptide bond
- C) hydrogen bond
- E) ionic bond

|| الرابطة الي موجودة بال glycerol

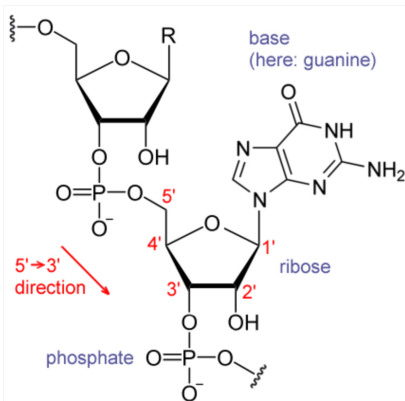
و بتربط بين ال glycerol وال two fatty acid

Q15 - which of the following represents a RNA ?

أعطى في السؤال خمس مركبات (على شكل skeleton)

وكان حاطط صورة ال glucose /galactose/chitin/DNA /RNA

Ans :



Q16 : what is the most abundant glycoprotein in the ECM of animal cells?

- A) collagen
- B) proteoglycan
- C) fibronectin
- D) integrins
- E) none of the above

Q17: Alpha helices in proteins present

- A) primary structure
- B) secondary structure
- C) tertiary structure
- D) quaternary structure

Q18- An examples of electro genetic pump

- A) H⁺ pump
- B) Na⁺/K⁺ pump
- C) H⁺/sucrose pump
- D) A+B
- E) A,B,C

Q) The type of electrogenic pump in plants, fungi, and bacteria is

- A) cotransport
- B) proton pump
- C) sodium-potassium pump
- D) carrier protein
- E) channel protein

Q19- Hemoglobin presents a ————protein

- A) primary structure
- B) secondary structure
- C) tertiary structure
- D) quaternary structure
- E) all of them

Q20- Phospholipids tails are hydrophobic because of containing

- 1) cholesterol
- 2) integral proteins
- 3) hydrocarbons
- 4) carbohydrates

Q21- Hydrogen bonding causes a lot of properties except

- A)polarity of water
- B)cohesion
- C)adhesion
- D)surface tension

Q22- Cell walls of fungi composed of ?

- A)cellulose
- B)chitin
- C)phospholipids
- D)carbohydrates

Q23- sickle-cell disease, is caused by the substitution of one amino acid (valine) for the - ?

Ans : glutamic acid

Q24 - function like rivets, fastening cells together into strong sheets :-

- A.tight junction
- B.Desmosomes
- C. plasmodesmata
- D.Gap junction

Q25 - All of these can be founded in a bacterium EXCEPT :

- A. cell wall
- B.DNA
- C.ribosomes
- D.cell membrane
- E. ER

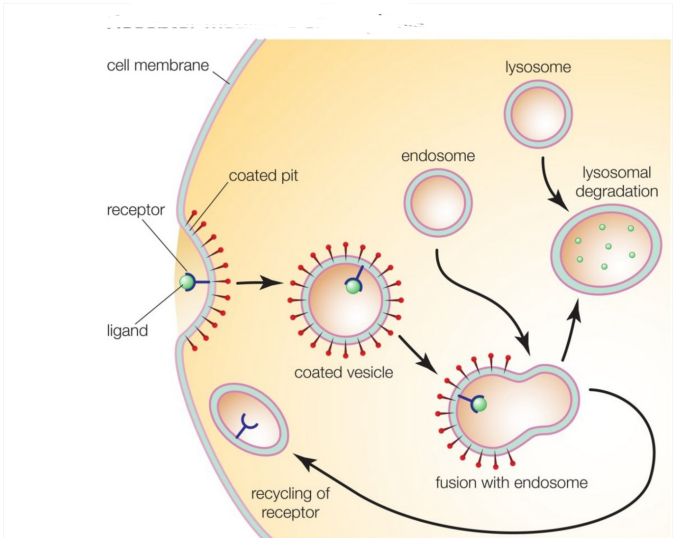
Q26- The function of Intermediate filament :

- A. Cell motility
- B. Anchoring nucleus
- C. formation of nuclear lamina
- D .a+b E. b+c

Q27- What is false about fats :

Ans : fat is a very polar molecule & fat is a polymer

Q28- what is this process called



- A) exocytosis
- B) pinocytosis
- C) receptor mediated endocytosis

Ans : C

Q29- which of the following is mismatched

- A) peroxisome - endomembrane system
- B) lysosome - internal digestion
- C) ribosomes - protein synthesis
- D) Golgi - protein trafficking

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)found in plant oils I think

Q31- which of the following is hydrophobic

- A)triglycerides
- B)starch
- C)cellulose
- D)glucose

Q32 : what is this



- A) fibrous protein
- B) globular protein
- C) quaternary protein
- D) primary protein
- E) A and C

Q33-. Which of the following is true about this figure:



- A. It is a fibrous protein
- B. It made of 3 polypeptides
- C. It represents quaternary structure of protein
- D. It is globular protein
- E. All of the above except (D)

Q34- what the Function of rough ER ?

Ans : ~~Secretion protiens~~

Q35 : If the concentration of salts in a plant cell is 5% and you put it in a solution with a concentration of 12%, what will happen to it?

Ans : plasmolyzed

Q36: An animal cell does not convert light into energy. What is it lacking?

Ans: Chloroplast

Q37: What is directly responsible for the digestion process in cells?

Answer: Lysosomes

Q38- There was a question about Na^+ transferring with glucose. What type of transfer is it?

Ans : Cotransport

Q39- which of the following the thicker :

A) Microfilament

B) Microtubules

C) Intermediate filament

Ans : B

Q40- There was a question about high concentration transferring to low concentration . What type of transfer is it?

Ans : Facilitated diffusion

Q41- What is not a component of nucleic acids?

Ans: Ribulose

Q42- Sickle cell disease is a **group of inherited disorders that affect the ...?**

Ans : hemoglobin

Q43 - Which components are not present in the ECM ?

Ans : Cellulose

Q44 - Middle lamella a thin layer rich in sticky polysaccharides known as

Ans : pectin

Q45 - true about Microfilaments :

Ans : Two intertwined strands of actin

Q46 : Tubulin is a component of ..?

Ans ; Microtubules

Q47 : How high is the magnification of a light microscope?

Ans : 1000x

Q48 : what the difference between aldoses and ketoses ?

Ans : position of carbonyl

Q49 - Which of the following is not true about protein?

Answer: it is branched

Q50 - What is the property of water in the picture below :



- A) Cohesion
- B) Surface Tension
- C) Cohesion & Surface Tension
- D) Adhesion

DOCTOR
2021

FIRST BIOLOGY



Done by:
Faten ALDra'awi

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 nucleic 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 pyrimidines 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 electron

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 generate 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	

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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/g°C) 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) Proteins, 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 is 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) Trioxylglycerol
- 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

. 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

. 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

.. 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

. 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

. 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

. 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. CO₂
- E. K⁺

Answer : D

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

True/ False

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

True/ False

. 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

. 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

. 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

. Integral membrane proteins lack hydrophilic domains.

True / False

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

True/ False

. 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. Shriveled 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

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

True/ False

. Chloride ion channels are membrane structures that include:

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

Answer : C

.. Which of the following is a cotransporter:

- A. Na^+ / K^+ pump
- B. $\text{H}^+ /$ sucrose transport protein
- C. Proton pump
- D. Chloride ion channel
- E. Sodium and potassium ion channels

Answer : B

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

True/ False

.. 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

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

True/ False