

ملاحظة: يجب كتابة الاسم رباعي وباللغة العربية

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Answer all the following questions

Q.1. Choose the correct answer (25 marks):

1	----- anchor the nucleus and some organelles to their places in the cell.	
	A. Intermediate filaments	B. Microtubules
	C. Microfilaments	D. Centrioles
2	Which molecules in the cell membrane are mostly glycoproteins?	
	A. carrier molecules	B. channel proteins
	C. transport proteins	D. receptor molecules
	E. enzymes	F. marker molecules
3	All the following processes need energy EXCEPT:	
	A. synthesis of fats	B. conduction of nerve impulse
	C. photosynthesis	D. muscle contraction
	E. formation of peptide bonds	F. all of above
4	The chromosome that looks like L during anaphase is called	
	A. telocentric chromosome	B. acrocentric chromosome
	C. submetacentric chromosome	D. metacentric chromosome
5	The process by which the bacteria enter the cell is called	
	A. pinocytosis	B. phagocytosis
	C. exocytosis	D. receptor mediated endocytosis
6	The class of lipids that does not contain fatty acids is	
	A. triglycerides	B. steroids
	C. phospholipids	D. waxes
7	A polysome contains	
	A. mRNA	B. tRNA
	C. rRNA	D. all of the above
8	All of the following are synthesized on free ribosomes and released in the cytosol EXCEPT:	
	A. nuclear matrix protein	B. cytoskeletal protein
	C. peroxisome protein	D. mitochondria protein
	E. chloroplast protein	F. plasma membrane protein

9	The junctions in plant cells that provide channels between adjacent cells are	
	A. anchoring junctions	B. gap junctions
	C. plasmodesmata	D. tight junctions
10	Which of the following structure-function pairs is incorrect?	
	A. nucleolus – ribosome production	B. Golgi apparatus – ATP production
	C. peroxisome – detoxification of poisons	D. chloroplast – photosynthesis
	E. lysosome – extracellular digestion	F. glyoxysome – store fats
11	During which stage of meiosis do the homologous chromosomes begin to move toward poles?	
	A. prophase I	B. telophase I
	C. anaphase II	D. anaphase I
	E. prophase II	F. telophase II
12	Which of the following does NOT involve microfilaments?	
	A. muscle contraction	B. cellular extensions
	C. movement of chromosomes in cell division	D. formation of cleavage furrow during cytokinesis
13	Which of the following statements about water is false?	
	A. Oxygen atoms in a water molecule are partial negatively charged and hydrogen atoms are partial positively charged.	B. Hydrogen bonds link hydrogen in one water molecule to oxygen in another molecule.
	C. Ice is less dense than liquid water	D. Water takes very little heat to raise the temperature of water
14	Location where mRNA and ribosomal subunits associate	
	A. nucleus	B. cytoplasm
	C. nucleolus	D. rough ER
15	The structures that digest extracellular substances which enter the cell by endocytosis are called	
	A. primary lysosomes	B. autophagosomes
	C. heterophagosomes	D. residual bodies
16	Chlorophyll pigment is	
	A. steroid	B. terpene
	C. fat	D. phospholipid
17	If one strand of a DNA molecule has the sequence of bases 5'-ATTGCA-3', the other strand would have the sequence	
	A. 3'-TAACGT -5'	B. 3'-UAACGU -5'
	C. 5'-TAACGT -3'	D. 5'-UAACGU -3'

18	Arrange the following in correct sequence:	
	1. Vesicles are pinched off from Golgi apparatus carrying newly formed proteins to plasma membrane.	
	2. Polypeptide chains move through rough ER and then carried in vesicles to Golgi apparatus.	
	3. Golgi apparatus modifies many of proteins and then packages them into vesicles.	
4. Polypeptide chains are made by ribosomes on rough ER.		
	A. 2, 4, 3, 1	B. 4, 2, 3, 1
	C. 4, 2, 1, 3	D. 2, 4, 1, 3
19	Tissues that subject to mechanical stress such as muscle and skin epithelium are characterized by	
	A. tight junctions	B. desmosomes
	C. plasmodesmata	D. gap junctions
20	The major components of extracellular matrix of animal cells are	
	A. glycolipids	B. lipoproteins
	C. glycoproteins	D. All of the above
21	Microtubules grow from the poles of the cell to kinetochores of each chromatid during	
	A. metaphase	B. interphase
	C. anaphase	D. prophase
	E. telophase	F. cytokinesis
22	Fluidity of plant cell membrane is increased by	
	A. unsaturated phospholipids	B. saturated phospholipids
	C. cholesterol	D. all of the above
23	----- has peptidyl transferase activity	
	A. 40S ribosomal subunit	B. 60S ribosomal subunit
	C. Aminoacyl tRNA	D. all of the above
24	Which of the following statements is true about DNA replication?	
	A. One DNA molecule becomes two identical ones as a result of this process.	B. It occurs during mitosis but not meiosis
	C. It is part of the protein synthesis process	D. All of the above
25	The primary structure of a protein refers to	
	A. interactions among the side chains or R-groups of the amino acids	B. coiling due to hydrogen bonding between amino acids
	C. the number and sequence of amino acids	D. the interaction of two or more polypeptides

Q.2. True (✓) or False (x)? (10 marks)

1. () In human body, germ line cells and somatic cells are diploid (2n).
2. () The smooth endoplasmic reticulum has a role in blood glucose homeostasis and detoxification of drugs.
3. () The aim of mitosis in unicellular and multicellular organisms is reproduction.
4. () Cilia exhibit an undulatory motion, while the flagella have a sweeping motion.
5. () Insulin is made up of two polypeptide chains that are synthesized separately and connected by disulfide bonds.
6. () Phosphorylation of sodium-potassium pump carrier causes sodium to leave the carrier while its dephosphorylation causes potassium to bind with it.
7. () Dark field microscope is ideal for observing colorless living microorganisms.
8. () Alanine is polar amino acid while serine is nonpolar amino acids.
9. () According to the fluid-mosaic model, the hydrophilic heads of the phospholipids face the intra and extracellular fluids.
10. () In counter transport, Ca^{++} leaves the cell against its concentration gradient while Na^{+} enters the cell down its concentration gradient.

Q.3. Complete the following (15 marks) :

- (1) Non-coding sequences in a gene are known as _____.
- (2) _____ is a protein released by certain body cells that stimulates other cells to divide.
- (3) _____ are substances that maintain a relatively constant pH level in living cells.
- (4) The phospholipid molecule consists of
A. _____,
B. _____ and
C. _____.
- (5) Gametogenesis is defined as _____.
- (6) The arrangement of microtubules of basal body is _____ pattern.

- (7) _____ is a specific nucleotides sequence of DNA where RNA polymerase binds and initiates transcription.
- (8) Water forms an abundance of hydrogen bonds, which are responsible for many of its physical properties such as:
- A. _____,
- B. _____,
- C. _____ and
- D. _____.
- (9) If a protein's environment is altered, the protein may change its shape or unfold, and this process is called _____.
- (10) The bonds that join nucleotides with each other called _____.
- (11) The requirements which are needed to pass the cell G₁ checkpoint:
- A. _____,
- B. _____,
- C. _____ and
- D. _____.
- (12) The intermediate filaments that occur in all types of muscle fibers composed of protein called _____.
- (13) Lactose consists of _____ and _____ that joined by a bond called _____.
- (14) Plasmolysis occurs when a plant cell is immersed in a _____ solution.
- (15) _____ is the microscope that uses ultraviolet to illuminate specimens.
- (16) When DNA replication occurs, the enzyme which separates the two sides of the helix is called _____.
- (17) During RNA processing, the cap is attached to _____ end of pre-mRNA and the function of this cap is
- A. _____ and
- B. _____.
- (18) Comment: The offspring of sexual reproduction vary genetically from both parents and from each other?
- _____.

Q.4. With drawing illustrate the following: (5 Marks)

1. ADP

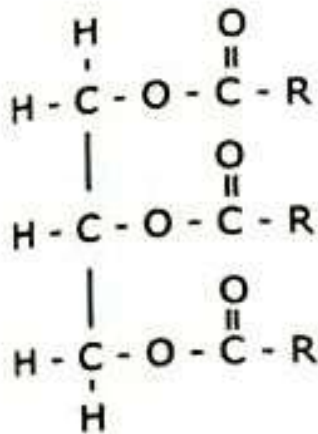
2. Valine

3. Fructose (straight chain)

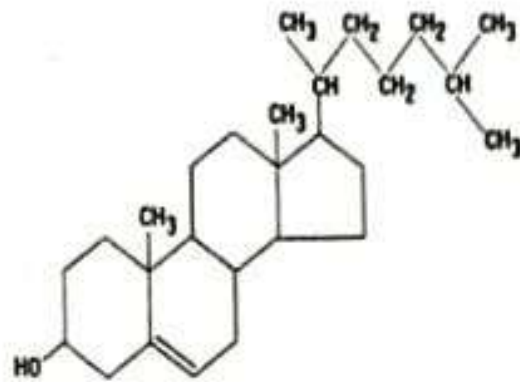
4. Formation of peptide bond

5. Nucleotide of DNA

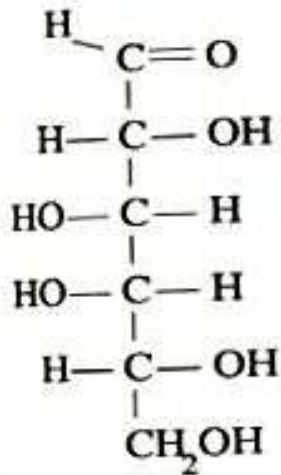
Q.5. Identify the following: (5 marks)



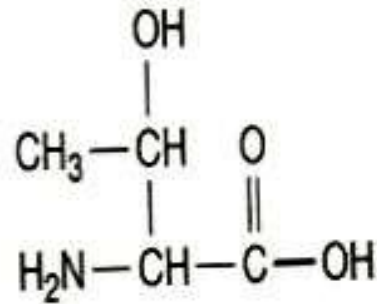
1. _____



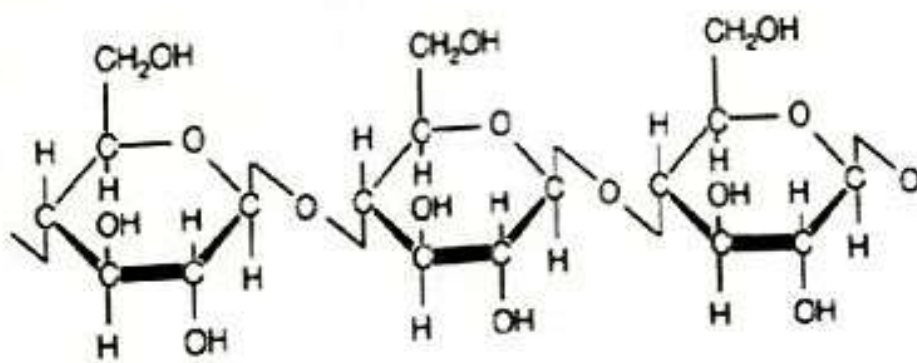
2. _____



3. _____



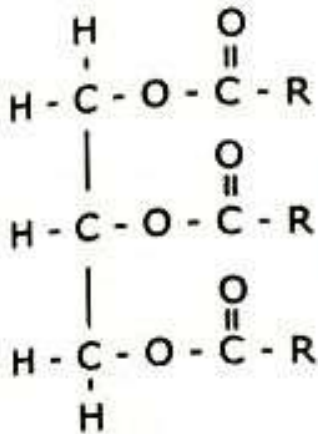
4. _____



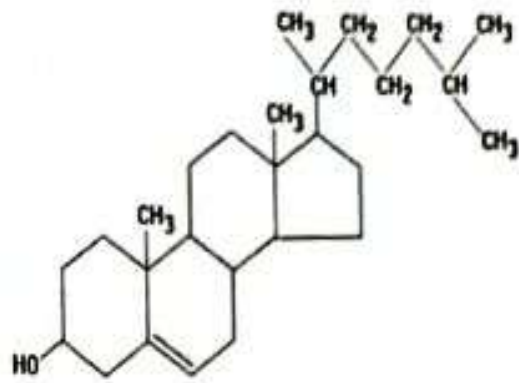
5. _____

Good Luck ☺

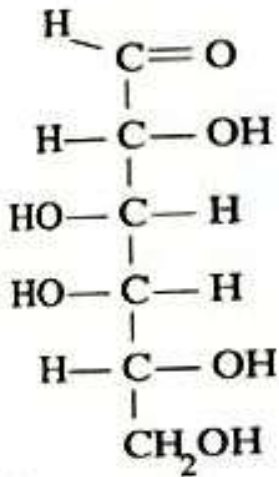
Q.5. Identify the following: (5 marks)



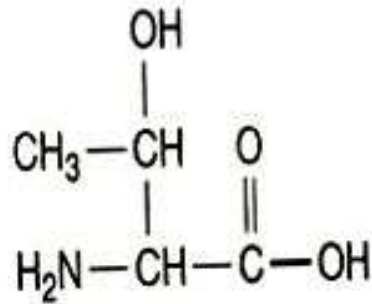
1. _____



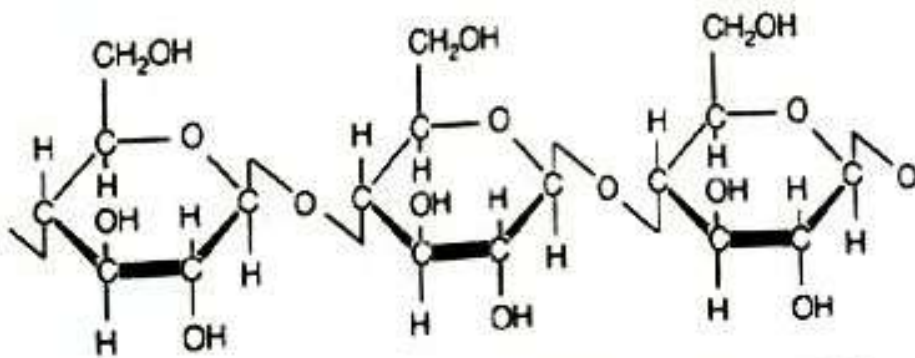
2. _____



3. _____



4. _____



5. _____

Good Luck ☺