Al Azhar University-Gaza
Cell biology/Pharmacy
Time: 2 hours

Final exam.
1st semester 2012/2013
Lecturer: Mona wadi

اسم الطالب/ة:

Answer all the following questions

Q.1. Choose the correct answer (20 marks):

1	**All of the following are synthesized on free ribosomes and released in the cytosol EXCEPT:**	
	A. nuclear proteins	B. mitochondrial proteins
	C. peroxisomal proteins	D. lysosomal proteins
	E. cytosketal proteins	F. chloroplast proteins
2	**The role of the oligosaccharides on the cell membrane is?**	
	A. transport	B. cell recognition
	C. catalysis	D. adhesion
	E. receptor molecules	F. none of the above
3	**In translation, The sequence of anticodon of the last charged tRNA is**	
	A. UAG	B.UAC
	C. AUC	D. AUG
	E. ATC	F. TAC
4	**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 separates and modifies varieties of proteins and then packages them into vesicles.** **4. Initiated by RNA, polypeptide chains are made by ribosomes on rough ER.**	
	A. 2, 4, 3,1	B. 2, 4, 1, 3
	C. 4, 2, 1, 3	D. 4, 2, 3, 1
5	**The sequence of nucleotides in a messenger RNA molecule is needed to determine the sequence of**	
	A. nucleotides in a gene	B. amino acids in a protein
	C. nucleotides in the anticodons of t-RNA	D. codons in DNA
6	**Which of the following is a non membranous organelle?**	
	A. a mitochondrion	B. the rough ER
	C. a centriole	D. a lysosome

16	**DNA replication results in:**	
	A. 2 completely new DNA molecules	B. 2 DNA molecules that each contain a strand of the original molecule
	C. 1 new DNA molecule, 1 old molecule is conserved	D. a single strand of DNA is copied to make two single strands of DNA
17	**Which of the following represents the correct order of the phases of the cell cycle?**	
	A. G_1 - G_2 - S - M	B. G_1 - S - G_2 - M
	C. G_1 - G_2 - M - S	D. G_1 - S - M - G_2
	E. G_1 - M - G_2 - S	F. S – G_1- G_2 – M
18	**The permeability of most membranes is reduced by the presence of ——— in the membrane.**	
	A. lipoproteins	B. proteins
	C. cholesterol	D. glycolipids
19	**A protein that is composed of more than one polypeptide chain has**	
	A. primary structure	B. secondary structure
	C. quaternary structure	D. tertiary structure
20	**Which molecule serves to destabilize the DNA helix in order to open it up, creating a replication fork?**	
	A. DNA polymerase III	B. DNA helicase
	C. DNA ligase	D. single strand binding proteins
	E. DNA polymerase I	F. primase

Q.2. Define the following (5 marks):

1. Nucleosome:

2. Primer:

3. Acrocentric chromosome:

4. Hemidesmosome:

5. Osmosis:

7	**A polysome contains**	
	A. mRNA	B. tRNA
	C. rRNA	D. all of the above
8	**What is the complementary strand of the following RNA se**	
	5' GCACGUUUACCGA 3'	
	A. 3' CGUGCAAAUGGCU 5'	B. 5' CGUGCAAAUGGCU 3'
	C. 3' CGTGCAAATGGCT 5'	D. 5' CGTGCAAATGGCT 3'
9	**The α helix and β sheet are found in many different proteins because they are formed by**	
	A. hydrogen bonding between the amino acid side chains	B. non covalent interactions betw amino acid side chains and the polypeptide backbone
	C. ionic interactions between charged amino acid side chains	D. hydrophobic interactions betw the many nonpolar amino acids
	E. hydrogen bonding between atoms of the polypeptide backbone	F. none of the above
10	**What enzyme catalyzes the formation of peptide bonds during translation?**	
	A. transferase A	B. aminoacyl tRNA synthase
	C. ribosomal ATPase	D. peptidyl transferase
	E. protease	F. none of the above
11	**Which of the following structure-function pairs is mismatched**	
	A. nucleolus - ribosome production	B. lysosome - extracellular digest
	C. ribosome - protein synthesis	D. Golgi apparatus - ATP produc
	E. chloroplast-photosynthesis	F. Glyoxysome – store fats
12	**During which stage of meiosis do homologous chromosomes begin to move toward the poles?**	
	A. prophase I	B. telophase I
	C. anaphase II	D. anaphase I
	E. prophase II	F. telophase II
13	**Facilitated transport and active transport are similar in that both:**	
	A. require ATP	B. move substances down the concentration gradient
	C. move substances against the concentration gradient	D. are passive processes
	E. require carrier proteins	F. require receptor proteins
14	**Which of the following does NOT involve microtubules?**	
	A. contraction of spindle	B. pinching during division
	C. movement of chromosomes during division	D. flagella motion
15	**Location where mRNA and ribosomal subunits associate**	
	A. nucleus	C. cytoplasm
	C. nucleolus	D. rough ER

Q.3. True or False? (8 marks)

1.( ) Prophase I is characterized by one-sided attachment of kinetochores but prophase II is characterized by two-sided attachment of kinetochores

2.( ) Glycogen and cellulose are polymers of α-glucose, glycogen is branched while cellulose is non branched.

3.( ) In eukaryotes, RNA polymerase II synthesizes mRNA while RNA polymerase III synthesize tRNA.

4.( ) Spermatogonia , primary oocytes, and somatic cells are diploid (2n).

5.( ) Synapsis, crossing over, and reduction of number of chromosomes occur during prophase I.

6.( ) Insulin is made up of two polypeptide chains that are synthesized separately.

7.( ) The P site is the site on the large subunit of ribosome where the tRNA adds its amino acid to the growing polypeptide chain.

8.( ) In counter transport, Na^{+} enters the cell against its concentration gradient while Ca^{++} leaves the cell down its concentration gradient.

9.( ) Interleukin is a protein that stimulates the production of red blood cells.

10.( ) The aim of mitosis in unicellular and multicellular organisms is reproduction.

11.( ) Collagen is structural protein but myoglobin is transport protein.

12.( ) Oxidation of proteins needs water and releases energy and this reaction is called hydrolysis

13.( ) Alanine is polar amino acid while serine is non polar amino acids.

14.( ) When a muscle is stimulated by nerve impulse, The smooth ER pumps calcium ions from the cytosol into the cisternal space.

15.( ) Phasphorylation of sodium-potassium pump carrier causes sodium to leave the carrier while its dephosphorylation causes sodium to bind with it.

16.( ) During G_0, cells are not considered to be in the cycle of division but become specialized in their function.

Q.4. Complete the following (12 marks) :

1. During mitosis, a parent cell having four chromosomes will produce two daughter cells, each containing ———— chromosomes.

2. The requirements which are needed to pass the cell G, checkpoint ————————, ———— and———————, and ————————.

3. Meiosis is reduction division because ————————.

4. Water forms an abundance of hydrogen bonds, which are responsible for many of its physical properties such as: ———— ,————,———— and ————.

5. If a protein's environment is altered, the protein may change its shape or unfold, and this process is called ————

6. Maltose consists of ———— and ————

7. Phospholipid molecule consists of ————,———— and ————.

8. The intermediate filaments that line the inner nuclear membrane is called ————.

9. Desmosomes are ———— junctions but plasmodesmata are ———— junctions.

10. Decreasing the cholesterol level in human blood is carried out by a process called ————.

11. Comment: Winter wheat tolerates extreme cold by increasing the percentage of unsaturated phospholipids in autumn.

12. What happens when plant cell is placed in hypotonic solution?

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

Lysine	β-glucose	Nucleotide of DNA
ATP		Cholesterol