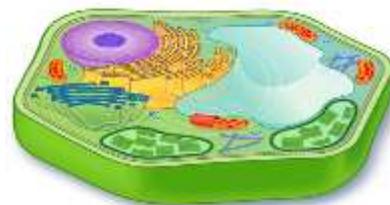


Question ONE: (50×0.5=25 Marks, 75 min)

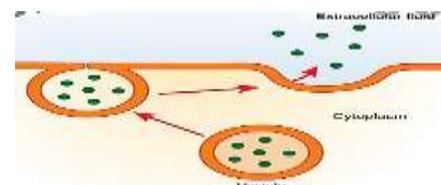
Choose only ONE correct answer and mark in the answer sheet:

- Which of the following cell organelles is surrounded by two phospholipid bilayers?
a. Ribosome b. Vesicle c. Cytoplasm d. Nucleoplasm
- What is the primary function of carbohydrates attached to the exterior of cell membrane?
a. Identification of the cell b. Flexibility of the membrane
c. Strengthening the membrane d. Transport channels in the membrane
- Chromosomes are duplicated in which of the following stages of the cell cycle?
a. G₁ phase b. S phase c. Prophase d. Metaphase
- The rough endoplasmic reticulum has located on it.
a. Lysosomes b. Proteins c. Ribosomes d. Centrosomes
- Which of the following cell organelles is involved in autophagy?
a. Lysosome b. ER c. Golgi apparatus d. Mitochondria
- What is the correct order of the stages of mitosis?
1-Metaphase 2-Telophase 3-Anaphase 4-Prophase
a. 4,3,2,1 b. 2,3,4,1 c. 4,1,3,2 d. 1,4,3,2
- The following figure represents which type of cells:

- Prokaryotic cell b. Animal cell
- Plant cell d. Bacterial cell



- The cell expends energy in which of the following transport mechanism?
a. Diffusion b. Osmosis c. Facilitated diffusion d. Active transport
- According to the figure below, the transport mechanism is:
a. Endocytosis b. Phagocytosis
c. Facilitated diffusion d. Exocytosis



10. Which of the following cellular organelles are involved in the initiation of the intrinsic pathway of apoptosis?

- a. Lysosomes b. Peroxisomes c. Mitochondria d. Ribosomes

11. Which of the following cytochrome is involved in the intrinsic pathway of apoptosis?

- a. Cytochrome *a* b. Cytochrome *b* c. Cytochrome *c* d. Cytochrome *d*

12. All the following are features of apoptosis EXCEPT:

- a. Cell swelling b. Chromatin condensation
c. Formation of blebs at the cell surface d. Lack of inflammation

13. is secondary active transporter that move two substances in the same direction.

- a. Antiporter b. Na⁺/K⁺ ATPase pump c. Symporter d. Uniporter

14. Molecules bearing both polar and nonpolar groups are called

- a. Hydrophilic b. Amphipathic c. Hydrophobic d. Polyfunctional

15. Which of the following stages of mitosis is characterized by the attachment of the mitotic spindle fibers to the kinetochores?

- a. Prophase b. Prometaphase c. Metaphase d. Anaphase

16. Which of the following cell organelles uses exocytosis to complete its function?

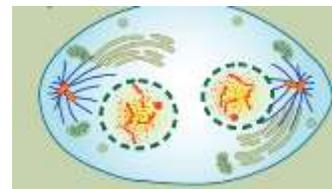
- a. Golgi apparatus b. Mitochondrion c. Vacuole d. Ribosome

17. Cellulose and starch are examples of

- a. Monosaccharides b. Disaccharides c. Lipids d. Polysaccharides

18. The following figure represents stage of mitosis.

- a. Prophase b. Telophase
c. Metaphase d. Anaphase

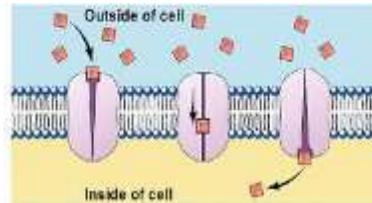


19. All of the following are correct regarding sodium-potassium pump EXCEPT:

- a. It's a type of active transport.
b. It pumps sodium & potassium ions each against its concentration gradient.
c. It requires ATP.
d. It acts as a symporter.

20. The following figure is an example of facilitated diffusion using a channel protein.

- a. True
- b. False



21. Caspases are involved in which of the following processes?

- a. Necrosis
- b. Apoptosis
- c. Autophagy
- d. Both a & b

22. Necrosis is unregulated cell death that lead to cell swelling with loss of plasma membrane integrity.

- a. True
- b. False

23. Pinocytosis is a type of active transport.

- a. True
- b. False

24. Cell membrane channels and pumps that help in transporting materials across the membrane are made of

- a. Carbohydrates
- b. Lipids
- c. Phospholipids
- d. Proteins

25. All prokaryotes have ribosomes.

- a. True
- b. False

26. Extracellular matrix is secreted mainly by.....

- b. Fibroblasts
- b. Erythroblasts
- c. Muscle fibers
- d. Neurons

27. The tissue membrane which lines the digestive and respiratory tracts is called.....

- a. Synovial membrane
- b. Mucous membrane
- c. Serous membrane
- d. Cutaneous membrane

28.make a connection between the cytoplasm of plant cells.

- a. Plasmodesmata
- b. Synapses
- c. Tissue membranes
- d. T-tubules

29. Elastin is a very tough protein that is found in the extracellular matrix of tissues

- a. True
- b. False

30. Which of the following is correct about extracellular matrix:

- a. It regulates communication between cells
- b. It plays important roles in maintaining tissue structure
- c. It is composed of proteins and polysaccharides
- d. All of the above

- 44. Which of the following carries instructions from DNA to the ribosome for protein synthesis.**
 a) mRNA b) tRNA c) rRNA d) snRNA
- 45. The coding region of DNA is termed.....**
 a) Exons b) Introns c) Spliceosomes d) Central dogma
- 46. The enzyme which is used in transcription is called.....**
 a) RNA primase b) RNA polymerase c) DNA polymerase d) ATP synthase
- 47. RNA is more stable than DNA.**
 a) True b) False
- 48. Which of the following RNA carries amino acids to the ribosome:**
 a) mRNA b) tRNA c) rRNA
- 49. Anticodon is the genetic code that founds on tRNA and pairs with mRNA codon.**
 a) True b) False
- 50. RNA is double-stranded molecule while DNA is a single-stranded one.**
 a) True b) False

Question TWO:

Write the scientific terms for the following statements:

(6x2=12 points, 15 min)

Statement	Scientific term
1. A fuzzy appearing coating around the cell formed from glycoproteins and other carbohydrates attached to the cell membrane	
2. One of the primary classes of cell cycle control molecules	
3. Membrane – bound sacs that function in storage and transport.	
4. The direct uptake of soluble or particulate cellular constituents into lysosomes for degradation	
5. A type of carrier protein that carries one specific ion or molecule	
6. A phase of cell cycle where cells permanently or temporarily stopped dividing.	

Question THREE:

Match each of the following: (13x1=13 marks, 30 min)

I- Match each of the following tissue in column (A) with its embryonic origin in column (B) (items in column (B) may be used more than ones)

#	Column (A)
1	Epithelial tissue lining the air ways ()
2	Nervous tissue ()
3	Erythrocytes ()
4	Muscle tissue ()
5	Epidermis (skin) ()
6	Bone ()

Column (B)
a) Ectoderm
b) Mesoderm
c) Endoderm

II- Match each of the following process in column (C) with its corresponding definition in column (D)

#	Column (C)
1	Transcription ()
2	Translation ()
3	Splicing ()
4	Ubiquitination ()
5	Post-translational modifications ()
6	mRNA capping ()
7	Tailing ()

Column (D)
a) Synthesis of protein in the cytoplasm
b) Synthesis of mRNA from DNA
c) Proteins are marked to be degraded by proteasome
d) Removal of introns
e) Addition of chemically modified nucleotide to the 5' end of the RNA
f) Chemical modification of protein after its translation
g) Addition of many A nucleotides to the 3-end of the RNA

Good luck