

**Question One:**

**Match each of the terms with the corresponding sentence and mark in the provided answer sheet on the last page:**

**(25x1.5=37.5 Marks, 30 min)**

- |                      |                                |           |
|----------------------|--------------------------------|-----------|
| a. Molecular biology | b. Cells                       | c. Growth |
| d. Homeostasis       | e. Positive feedback mechanism |           |

- |  |
|--|
| <ol style="list-style-type: none"><li>1. The smallest unit of living tissue that can function as an independent entity</li><li>2. Can be manifested at the cellular level through the maintenance of a stable internal acidity and a constant internal body temperature</li><li>3. A good example of it is blood platelet accumulation in response to a tear in the lining of blood vessels</li><li>4. Study the complex interactions of biological molecules such as proteins &amp; nucleic acids</li><li>5. The permanent increase in cell number and size</li></ol> |
|--|

- |                               |                    |                       |
|-------------------------------|--------------------|-----------------------|
| a- Simple squamous epithelium | b- Exocrine glands | c- Connective tissues |
| d- Collagen                   | e- Lacuna          |                       |

- |  |
|--|
| <ol style="list-style-type: none"><li>6. Flexible protein resistant to stretching with tensile strength</li><li>7. Types include cartilage, blood and adipose tissue</li><li>8. Spaces in which osteocytes found</li><li>9. Secrete onto the body surface or into a cavity, through a duct</li><li>10. Usually lines body cavities, vessels, alveoli and glomeruli of kidney</li></ol> |
|--|

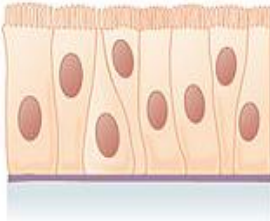
- |                 |                |           |
|-----------------|----------------|-----------|
| a. ATP          | b. Stomata     | c. Stroma |
| d. Chondrocytes | e. Cytochromes | f.        |

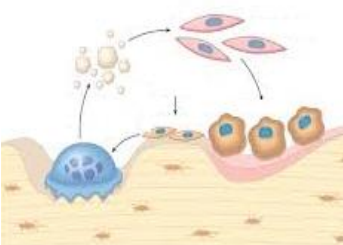
- |  |
|--|
| <ol style="list-style-type: none"><li>11. Responsible for gas exchange</li><li>12. Cartilage-forming cells</li><li>13. It contains 2 Phospho-Anhydride bond which are High-energy bonds</li><li>14. Proteins directly involved in electron transport</li><li>15. Fluid-filled space inside the innermost membrane of chloroplast</li></ol> |
|--|

**Question Two:**

**Regarding the following figures, answer the questions and mark in the provided answer sheet on the last page:**

**(25x1.5=37.5 Marks, 30 min)**

<p><b>Figure (1) represents:</b></p> <ul style="list-style-type: none"><li>a. Simple squamous epithelium</li><li>b. Stratified squamous epithelium</li><li>c. Simple columar epithelium</li><li>d. Psuedostratified squamous epithelium</li></ul>	
<p><b>This epithelium usually lines:</b></p> <ul style="list-style-type: none"><li>a. Trachea and male urethra</li><li>b. Ducts in kidney and salivary glands</li><li>c. Digestive tract and uterine tubes</li><li>d. Mouth, esophagus and vagina</li></ul>	<p>Figure (1)</p>

<p><b>Figure (2) represents bone remodeling, bone is considered as:</b></p> <ul style="list-style-type: none"><li>a. Epithelial tissue</li><li>b. Connective tissue</li><li>c. Nervous tissue</li><li>d. Mesodermal tissue</li></ul>	
<p><b>Bone-forming ground substance is:</b></p> <ul style="list-style-type: none"><li>a. Keratin sulphate</li><li>b. Chondroitin sulfate</li><li>c. Calcium phosphate</li><li>d. Hyaluronic acid</li></ul>	<p>Figure (2)</p>
<p><b>Bone cells that mend and synthesize new bones are:</b></p> <ul style="list-style-type: none"><li>a. Osteocytes</li><li>b. Osteoblasts</li><li>c. Osteoclasts</li><li>d. Fibroblasts</li></ul>	

**Figure (3) represents plasma membrane, the layer of glycoproteins and glycolipids. on the outer surface of the cell is called:**

- a. Plasmid
- b. Peristeam
- c. Perichondrium
- d. Glycocalyx

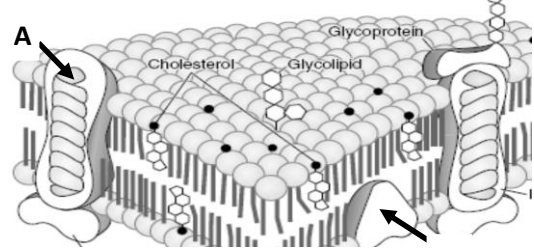


Figure (3) B

**Cholesterol is lipid component of cell membranes and important for:**

- a. Fluidity
- b. Electronegativity
- c. Secretory function
- d. Excretory function

**The plasma membrane-consisting bilayer is:**

- a. Nucleic acids
- b. Phospholipids
- c. Proteins
- d. Carbohydrates

**Regarding figure (3), structure A represents:**

- a. Nucleic acid
- b. Sphingomyelin
- c. Integral protein
- d. Peripheral protein

**Regarding figure (3), structure B represents:**

- a. Nucleic acid
- b. Sphingomyelin
- c. Intrinsic protein
- d. Extrinsic protein

**Question Three:**

**Select the ONE correct answer and mark in the provided answer sheet on the last page:**

**(25x1.5=37.5 Marks, 30 min)**

---

**Epithelium-forming cells are all of the following EXCEPT:**

- a. squamous
- b. macrophages
- c. cuboidal
- d. columnar

**..... are involuntary muscles consist of mononucleated or dinucleated branched cells.**

- a. Striated muscles
- b. Smooth muscles
- c. Cardiac muscles
- d. Lung muscles

**..... is repeating unit make up myofibrils.**

- a. Sarcoplasmic reticulum
- b. Sarcomere
- c. Mitochondion
- d. Vacuole

**All of the following are troponin binding sites, EXCEPT:**

- a. Myosin
- b. Actin
- c. Calcium ions
- d. Magnesium ions

**..... is an example of ground substance-forming proteoglycan.**

- a. Acetyl CoA
- b. Chondroitin sulfate
- c. Reticulin
- d. Fructose

**The theory explaining striated muscle contraction is:**

- a. Fluid mosaic
- b. Chargaff
- c. Watson and Crick
- d. Sliding filament

**Glycolysis is a catabolic pathway that begins with glucose and ends with:**

- a. Sucrose

- b. Ribose
- c. Pyruvate
- d. Acetate

**All stages of cellular respiration occur in mitochondria, EXCEPT:**

- a. Glycolysis
- b. Preparatory reaction
- c. Citric Acid Cycle
- d. Electron Transport System

**..... is energy-rich reduced coenzyme.**

- a. CO<sub>2</sub>
- b. Mg<sup>2+</sup>
- c. FADH<sub>2</sub>
- d. O<sub>2</sub>

**The chemical equation for cellular respiration is:**

- a.  $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 36-38ATP$
- b.  $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
- c.  $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 6NADH + 2FADH_2$
- d.  $6CO_2 + 6H_2O + 6NDPH + 2ATP \rightarrow C_6H_{12}O_6 + 6O_2$

**Histidine is an example of:**

- a. Essential amino acid
- b. Semi-essential amino acid
- c. Simple sugar
- d. Complex sugar

**Proteins formed of more than one polypeptide chain are called:**

- a. Allosteric enzymes
- b. Hydrophobic proteins
- c. Oligomeric proteins
- d. None of the above

**..... is an amino acid which is very rigid and creates a fixed kink in a protein chain limiting folding in the region of its residues.**

- a. Proline
- b. Glycine
- c. Cysteine
- d. Glutamine

**Functions of proteins include:**

- a. Turning a specific gene on or off
- b. Catalyzing chemical reactions
- c. Structural function

- d. All of the above

**The building blocks of the polysaccharides are linked together by:**

- a. Peptide bond
- b. Ionic bond
- c. Glycosidic bond
- d. Phosphate bond

**D-mannose and D-galactose are ..... of D-glucose.**

- a. Epimers
- b. Anomers
- c. Aldo-keto-isomers
- d. None of the above

**The disaccharide lactose is the major sugar in milk, which is composed of:**

- a. Galactose and glucose
- b. Glucose and fructose
- c. Two molecules of glucose
- d. Glucose and mannose

**The storage carbohydrate in animal cells is:**

- a. Glycogen
- b. Starch
- c. Cellulose
- d. Glucagon

**..... is a segment of a DNA molecule that contains the information required for the synthesis of a functional biological product.**

- a. Genome
- b. Chromosome
- c. Gene
- d. None of the above

**If the alleles are identical in base sequence, this gene will be:**

- a. Homozygous
- b. Homologous
- c. Heterozygous
- d. Mutated

**The enzyme catalyzing the linkage of nucleotides into an RNA chain using DNA as a template is:**

- a. DNase
- b. RNase
- c. DNA polymerase
- d. RNA polymerase

**The principal phospholipids in the plasma membrane are all of the following EXCEPT:**

- a. Phosphatidylcholine
- b. Phosphatidylethanolamine
- c. Phosphatidylserine
- d. Phosphatidylinositol

**Ions (Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>), sugars and amino acids are transported across cell membrane by:**

- a. Simple diffusion
- b. Facilitated diffusion
- c. Active transport
- d. Endocytosis

**An entire cell is engulfed by specialized cell through:**

- a. Potocytosis
- b. Phagocytosis
- c. Pinocytosis
- d. Receptor-mediated endocytosis

#### **Question Four:**

**Select T for true or F for false for each of the following statements and mark in the provided answer sheet on the last page:**

**(25x1.5=37.5 Marks, 30 min)**

---

Tendons and ligaments are formed from loose connective tissues.

- a. True
- b. False

External ear and in epiglottis are formed from elastic cartilage.

- a. True
- b. False

The outer mitochondrial membrane contains special pores, making it freely permeable to most ions and small molecules.

- a. True
- b. False

Carbon fixation stage of photosynthesis occurs in the thylakoid stacks of the grana.

- a. True
- b. False

DNA nucleotides contain nitrogenous bases, ribose sugars and phosphate groups.

- a. True
- b. False

The complex of DNA and proteins is called histone.

- a. True
- b. False

The plasma membrane phospholipids possess amphipathic nature.

- a. True
- b. False

Counter-transport is the transport of two substances at the same time in the same direction utilizing symports.

- a. True
- b. False

If a cell is placed in a hypotonic solution, the cell will gain water and swell.

- a. True
- b. False

Endocytosis is the movement of large molecules bound in vesicles out of the cell with the aid of ATP energy.

- a. True
- b. False

The nucleotides of DNA and RNA are linked in a linear sequence by 3'- to 5'-phosphodiester bonds between the nitrogenous bases.

- a. True
- b. False

*EST WISHES*