

Question 1 (5 points)

Which component of the cell produces hydrogen peroxide (H₂O₂) by using oxygen to remove hydrogen atoms from specific substrates in an oxidative reaction?

Question 1 options:

- Lysosomes
- Peroxisomes
- Ribosomes
- Oxyhydrosomes

Question 2 (5 points)

What is a consequence of plasma membrane damage to the mitochondria?

Question 2 options:

- Enzymatic digestion halts deoxyribonucleic acid (DNA) synthesis.
- Influx of calcium ions halts adenosine triphosphate (ATP) production.
- Edema from an influx in sodium causes a reduction in ATP production.
- Potassium shifts out of the mitochondria, which destroys the infrastructure.

Question 3 (5 points)

Which statement is a description of one of the characteristics of apoptosis?

Question 3 options:

- Apoptosis involves programmed cell death of scattered single cells.
- Apoptosis is characterized by the swelling of the nucleus and the cytoplasm.
- Apoptosis involves unpredictable patterns of cell death.

- Apoptosis results in benign malignancies.

Question 4 (5 points)

During cell injury caused by hypoxia, sodium and water move into the cell because:

Question 4 options:

- During cell injury caused by hypoxia, sodium and water move into the cell because:
- The pump that transports sodium out of the cell cannot function because of a decrease in adenosine triphosphate (ATP) levels.
- The osmotic pressure is increased, which pulls additional sodium across the cell membrane
- Oxygen is not available to bind with sodium to maintain it outside of the cell.

Question 5 (5 points)

What is an effect of ionizing radiation exposure?

Question 5 options:

- Respiratory distress
- Sun intolerance
- Deoxyribonucleic acid (DNA) aberrations
- Death

Question 6 (5 points)

Obesity creates a greater risk for dehydration in people because:

Question 6 options: chapter 3 q.2

- Adipose cells contain little water because fat is water repelling.
- The metabolic rates of obese adults are slower than those of lean adults.

- The rates of urine output of obese adults are higher than those of lean adults.
- The thirst receptors of the hypothalamus do not function effectively.

Question 7 (5 points)

In addition to osmosis, what force is involved in the movement of water between the plasma and interstitial fluid spaces?

Question 7 options:

- a) Oncotic pressure
- b) Buffering
- c) Net filtration
- d) Hydrostatic pressure

Question 8 (5 points)

Venous obstruction is a cause of edema because of an increase in which pressure?

Question 8 options:

- a) Capillary hydrostatic
- b) Interstitial hydrostatic
- c) Capillary oncotic
- d) Interstitial oncotic

Question 9 (5 points)

At the arterial end of capillaries, fluid moves from the intravascular space into the interstitial space because:

Question 9 options:

- a) The interstitial hydrostatic pressure is higher than the capillary hydrostatic pressure.
- b) The capillary hydrostatic pressure is higher than the capillary oncotic pressure.
- c) The interstitial oncotic pressure is higher than the interstitial hydrostatic pressure.
- d) The capillary oncotic pressure is lower than the interstitial hydrostatic pressure.

Question 10 (5 points)

It is true that natriuretic peptides:

Question 10 options:

- a) Decrease blood pressure and increase sodium and water excretion.
- b) Increase blood pressure and decrease sodium and water excretion.
- c) Increase the heart rate and decrease potassium excretion.
- d) Decrease the heart rate and increase potassium excretion.

Question 11 (5 points)

What causes the clinical manifestations of confusion, convulsions, cerebral hemorrhage, and coma in hypernatremia?

Question 11 options:

- a) High sodium in the blood vessels pulls water out of the brain cells into the blood vessels, causing brain cells to shrink.
- b) High sodium in the brain cells pulls water out of the blood vessels into the brain cells, causing them to swell.
- c) High sodium in the blood vessels pulls potassium out of the brain cells, which slows the synapses in the brain.
- d) High sodium in the blood vessels draws chloride into the brain cells followed by water, causing the

brain cells to swell.

Question 12 (5 points)

A major determinant of the resting membrane potential necessary for the transmission of nerve impulses is the ratio between:

Question 12 options:

- a) Intracellular and extracellular Na⁺
- b) Intracellular and extracellular K⁺
- c) Intracellular Na⁺ and extracellular K⁺
- d) Intracellular K⁺ and extracellular Na⁺

Question 13 (5 points)

In hyperkalemia, what change occurs to the cells' resting membrane potential?

Question 13 options:

- a) Hypopolarization
- b) Hyperexcitability
- c) Depolarization
- d) Repolarization

Question 14 (5 points)

Physiologic pH is maintained at approximately 7.4 because bicarbonate (HCO₃) and carbonic acid (H₂CO₃) exist in a ratio of:

Question 14 options:

- a) 20:1

- b) 1:20
- c) 10:2
- d) 10:5

Question 15 (5 points)

Increased capillary hydrostatic pressure results in edema because of:

Question 15 options:

- a) Losses or diminished production of plasma albumin
- b) Inflammation resulting from an immune response
- c) Blockage within the lymphatic channel system
- d) Sodium and water retention

Question 16 (5 points)

Hypomethylation and the resulting effect on oncogenes result in:

Question 16 options:

- a) A decrease in the activity of the oncogene, thus suppressing cancer development
- b) Deactivation of MLH1 to halt deoxyribonucleic acid (DNA) repair
- c) An increase in tumor progression from benign to malignant
- d) Overexpression of micro-ribonucleic acid (miRNA), resulting in tumorigenesis

Question 17 (5 points)

The functions of the major histocompatibility complex (MHC) and CD1 molecules are alike because both:

Question 17 options:

- a) Are antigen-presenting molecules
- b) Bind antigens to antibodies
- c) Secrete interleukins (ILs) during the immune process
- d) Are capable of activating cytotoxic T lymphocytes

Question 18 (5 points)

The B-cell receptor (BCR) complex functions uniquely by:

Question 18 options:

- a) Communicating information about the antigen to the helper T (Th) cell
- b) Secreting chemical signals to help cells communicate
- c) Recognizing the antigen on the surface of the B lymphocyte
- d) Communicating information about the antigen to the cell nucleus

Question 19 (5 points)

The generation of clonal diversity includes a process that:

Question 19 options:

- a) Involves antigens that select lymphocytes with compatible receptors
- b) Allows the differentiation of cells into antibody-secreting plasma cells or mature T cells
- c) Takes place in the primary (central) lymphoid organs
- d) Causes antigens to expand and diversify their populations

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