



COMPETIFY HUB

BIOLOGY

GRADES 1-4

Providing Free Resources for All

EASY

Q1: Tonicity in Cells

If a cell's cytoplasm is hypotonic to its environment, what will happen to the cell? A. The cell will shrivel up B. The cell will swell and lyse C. Nothing will happen to the cell D. The cell membrane will dissipate and the cell will collapse

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Q2: Animal cell organelles

A cell in the pancreas of an animal would most likely be the most abundant in which of the following cell structures? A. chloroplasts B. free ribosomes C. bound ribosomes D. lysosomes E. peroxisomes F. chromoplasts

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Q3: Cell Biology

Which of the following is a function of membrane proteins? A. to process lipids and proteins for secretion through the plasma membrane B. to act as receptors for hormones C. to synthesise proteins from amino acids D. to act as a cytoskeleton to support and shape the cell

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Q4: Membrane Structure and Function

What types of lipids are cell membranes made of? A. Unsaturated phospholipids only B. Saturated phospholipids only C. Triglycerides and fatty acids D. Both saturated and unsaturated phospholipids

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Q5: Cyclins and The Cell Cycle

How many types of cyclins are found in humans, and what are they called? A. 3; G1 cyclins, S cyclins, and M cyclins B. 4; G1 cyclins, G1/S cyclins, S cyclins, and M cyclins C. 1; G1 cyclins D. 2; G1 cyclins and G2 cyclins

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Q6: Apoptosis Triggers

Which of the following are major triggers for apoptosis?
a. Natural formation of certain regions of the body
b. Excessive damage due to DNA
c. Excessive protein misfolding
d. All of the above
Write only the letter of the answer (e.g. "C")

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Q7: Genetic Analysis Instrument

A geneticist wants to detect specific gene sequences, genetic variations, and identify genetic diseases. Which instrument should be used? Select one and write only the letter of your choice. a. Gel electrophoresis b. Microarray c. Karyotype d. Amniocentesis

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Q8: Grasshopper Sex Determination

Which chromosomal sex-determination system applies if females have two sex chromosomes and males have only one? Select one and write only the letter of your choice. a. X–Y system b. X–0 system c. Z–W system d. Haploid–Diploid system

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Q9: Codominance Level in Sickle Cell Anemia

Sickle cell anemia exhibits codominance at which organizational level? Select one and write only the letter of your choice. a. Molecular b. Cellular c. System d. Chemical

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Q10: Hemophilia Inheritance Probability

A child is born to a father diagnosed with hemophilia (a sex-linked recessive disease) and a mother who does not carry the trait for hemophilia. What is the probability that the child has hemophilia? Select one and write only the letter of your choice. a. 0% b. 25% c. 50% d. 75% e. 100%

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S1: A

Explanation:

Answer – A. Correct Answer: A If the cell's cytoplasm is hypotonic to its environment, it means that it has a lower concentration of solutes and a higher concentration of water. Due to osmosis, this will cause the water to diffuse down its gradient into the cell's surrounding environment, making the cell lose water and shrivel.

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S2: C. bound ribosomes

Explanation:

Answer – C. bound ribosomes. The pancreas mainly specializes in secreting digestive enzymes, which are proteins. Bound ribosomes are responsible for the production of proteins for export out of the cell.

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S3: B. to act as receptors for hormones

Explanation:

Answer – B. to act as receptors for hormones. Membrane proteins are proteins embedded in or attached to the plasma membrane of a cell. They have various functions, but their main roles are related to communication and transport across the membrane. One of the key functions is to act as receptors, which means they can bind to hormones, neurotransmitters, or other signaling molecules and trigger a response inside the cell.

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S4: D

Explanation:

Answer – D. Answer – D. The phospholipid bilayer of the cell membrane is composed of both saturated and unsaturated phospholipids. Unsaturated phospholipids provide fluidity to the membrane, and saturated phospholipids provide structure.

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S5: B

Explanation:

Answer – B. Answer – B. Cyclins are proteins that control progression through different stages of the cell cycle. In humans, cyclins are classified by when they act during the cell cycle (G1, G1/S, S, and M phases).

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S6: D

Explanation:

Answer – D. Apoptosis is triggered by programmed developmental signals, DNA damage, and endoplasmic reticulum stress from misfolded proteins.

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S7: b

Explanation:

Answer – b. Microarrays detect specific DNA sequences and gene expression patterns, making them ideal for identifying genetic variation and disease.

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S8: b

Explanation:

Answer – b. In the X-0 system, females are XX and males possess only a single X chromosome, as seen in grasshoppers.

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S9: a

Explanation:

Answer – a. Both hemoglobin alleles are expressed at the molecular level, producing both normal and sickle-shaped hemoglobin.

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S10: a

Explanation:

Answer – a. Hemophilia is an X-linked recessive disorder. The father has genotype X^hY , while the mother is XX . Sons inherit a normal X from the mother, and daughters are carriers only. No child is affected, so the probability is 0%.

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