

# HESI A2 Entrance Exam Biology EXAM QUESTIONS AND ANSWERS GRADED A LATEST VERSION 2023/2024

Which of the following is a correct description of metaphase during mitosis?

- A) The nuclear envelope disappears and the chromosomes begin to attach to the spindle that forms along the axis of the cell.
- B) Chromosomes gather on either side of the now separating cell.
- C) Chromosomes start to separate.
- D) Chromosomes align along the center of the cell. - CORRECT ANSWER
- D) Chromosomes align along the center of the cell.

Where can ribosomes be found inside a cell?

- A) Attached to the endoplasmic reticulum and in the cytoplasm.
- B) Only in the cytoplasm.
- C) Only attached to the endoplasmic reticulum.
- D) None of the above. - CORRECT ANSWER
- A) Attached to the endoplasmic reticulum and in the cytoplasm.

What is the role of the Golgi apparatus in the cell?

- A) To provide intracellular digestion.
- B) To provide transportation of materials throughout the cell.
- C) To uptake food through the cell membrane.
- D) To produce cellular respiration. - CORRECT ANSWER
- B) To provide transportation of materials throughout the cell.

What characteristic of water allows for hydrogen bonding between molecules?

- A) Its high specific heat.
- B) Its cohesive properties.
- C) Its covalent bonds.
- D) Its polar nature. - CORRECT ANSWER
- D) Its polar nature.

Which of the following is the MOST inclusive in the hierarchic system of organization?

- A) Kingdom.
- B) Class.
- C) Genus.
- D) Species. - CORRECT ANSWER
- A) Kingdom

In which phase of the cell cycle is DNA replicated?

- A) G1
- B) S
- C) G2
- D) D1 - CORRECT ANSWER
- B) S

Which of the following processes reduces cells originally classified as diploid to haploid?

- A) Meiosis.
- B) Mitosis.
- C) Both meiosis and mitosis.
- D) Neither meiosis and mitosis. - CORRECT ANSWER
- A) Meiosis.

Which of the following is an example of a cell created by meiosis?

- A) Kidney cell.
- B) Sperm cell.
- C) Brain cell.
- D) Skin cell. - CORRECT ANSWER    B) Sperm cell

The Krebs cycle is a process described as:

- A) the creation of ATP and Pyruvate.
- B) the creation of GTP and NADH.
- C) the process by which plants take in carbon dioxide and produce oxygen.
- a) a linear method of creating energy. - CORRECT ANSWER
- B) the creation of GTP and NADH.

The plasma membranes of cells are composed of:

- A) a single layer of phospholipid molecules.
- B) a bilayer of phospholipid molecules.
- C) proteins that act as transport highways.
- D) mitochondria. - CORRECT ANSWER    B) a bilayer of phospholipid molecules.

Which of the following activities does NOT lead to cellular energy production?

- A) Glycolysis.
- B) Gluconeogenesis.
- C) Oxidative Phosphorylation.
- D) Cellular Respiration. - CORRECT ANSWER
- B) Gluconeogenesis.

Using garden peas, which of the following scientists discovered the basic principles of genetics?

- A)Galileo.
- B)Mendel.
- C)Curie.
- D)Hawking. - CORRECT ANSWER B)Mendel.

The alternative versions of a single gene are known as:

- A)traits.
- B)characteristics.
- C)RNA.
- D)alleles. - CORRECT ANSWER D)alleles.

What device makes it possible to predict the genotype and phenotype of the offspring of sexual reproduction?

- A)Punnett square.
- B)Chi square.
- C)PCR.
- D)Microscope. - CORRECT ANSWER A)Punnett square.

The traits which an organism shows (as opposed to what its genes code for), is known by which of the following terms?

- A)Phenotype.
- B)Genotype.
- C)Stereotype.
- D)Classification. - CORRECT ANSWER A)Phenotype

An organism that has a genotype of two dominant alleles for one gene is:

- A) Heterozygous.
- B) Homozygous.
- C) Multiparous.
- D) Nulliparous - CORRECT ANSWER    B) Homozygous.

The method by which mRNA is created is begun by which of the following processes?

- A) Replication.
- B) Translation.
- C) Splitting.
- D) Transcription. - CORRECT ANSWER    D) Transcription.

Which scientists are responsible for describing the structure of DNA?

- A) Watson and Crick.
- B) Watson and Holmes.
- C) Holmes and Croiger.
- D) Brown and Curie. - CORRECT ANSWER    A) Watson and Crick.

All genes can be described using the Punnett Square method. True or False?

- A) True
- B) False - CORRECT ANSWER    B) False

The term pleiotropy is best defined as:

- A) A condition in which multiple genes are missing.
- B) A situation in which one gene remains unexpressed.