

CXC General Biology Quiz

1. What is the main function of chlorophyll in photosynthesis?

- A)** To absorb water
- B)** To absorb light energy
- C)** To release oxygen
- D)** To transport glucose

Answer:

- B)** To absorb light energy

2. In a simple genetic cross between two heterozygous pea plants ($Bb \times Bb$), what is the probability of obtaining a homozygous recessive offspring (bb)?

- A)** 0%
- B)** 25%
- C)** 50%
- D)** 75%

Answer:

- B)** 25%

3. Calculate the magnification of a microscope if the objective lens has a magnification of 10x and the eyepiece lens has a magnification of 15x.

- A)** 25x
- B)** 150x
- C)** 100x
- D)** 50x

Answer:

- B)** 150x

4. Which of the following is NOT a characteristic of living organisms?

- A)** Growth and development
- B)** Ability to reproduce
- C)** Ability to conduct electricity
- D)** Response to stimuli

Answer:

C) Ability to conduct electricity

5. During which phase of the cell cycle does DNA replication occur?

- A) G1 phase
- B) S phase
- C) G2 phase
- D) M phase

Answer:

B) S phase

6. The human blood type AB is an example of which type of inheritance?

- A) Incomplete dominance
- B) Codominance
- C) Mendelian inheritance
- D) Polygenic inheritance

Answer:

B) Codominance

7. How many chromosomes are present in a human gamete (sperm or egg)?

- A) 46
- B) 23
- C) 92
- D) 48

Answer:

B) 23

8. What is the role of the ribosome in a cell?

- A) To generate ATP
- B) To synthesize proteins

- C) To store genetic information
- D) To break down toxins

Answer:

- B) To synthesize proteins

9. Calculate the surface area to volume ratio for a cube with a side length of 2 cm.

$$\text{Surface Area} = 6 \times (\text{side length})^2$$

$$\text{Volume} = (\text{side length})^3$$

- A) 3:1
- B) 2:1
- C) 1:1
- D) 6:1

Answer:

$$\text{Surface Area} = 6 \times (2)^2 = 6 \times 4 = 24 \text{ cm}^2$$

$$\text{Volume} = (2)^3 = 8 \text{ cm}^3$$

$$\text{Surface Area to Volume Ratio} = 24:8 = 3:1$$

Answer:

- A) 3:1

10. What type of bond is formed between amino acids to create a protein?

- A) Ionic bond
- B) Hydrogen bond
- C) Covalent bond (Peptide bond)
- D) Van der Waals forces

Answer:

- C) Covalent bond (Peptide bond)

O'Level Biology Quiz

1. What is the basic unit of life?

Answer:

Cell

2. What is the function of the mitochondria?

Answer:

They are the powerhouses of the cell, producing energy in the form of ATP.

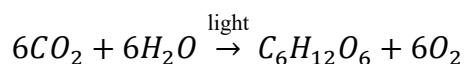
3. What is the process by which plants make their own food?

Answer:

Photosynthesis

4. What is the chemical equation for photosynthesis?

Answer:



5. What is the function of the cell membrane?

Answer:

It controls the movement of substances in and out of the cell.

6. What is the difference between prokaryotic and eukaryotic cells?

Answer:

Prokaryotic cells lack a nucleus, while eukaryotic cells have a membrane-bound nucleus.

7. How many chromosomes do humans have?

Answer:

46 chromosomes (23 pairs)

8. Define the term "genotype."

Answer:

The genetic makeup of an organism.

9. Define "phenotype."

Answer:

The physical expression of the genotype (the observable traits).

10. What is a dominant allele?

Answer:

An allele that expresses its trait even in the presence of a different allele.

11. What is the function of ribosomes?

Answer:

They are the site of protein synthesis.

12. What is the role of the large intestine in digestion?

Answer:

It absorbs water and salts from undigested food and forms solid waste (feces).

13. What are enzymes?

Answer:

Proteins that catalyze biochemical reactions, speeding up the process.

14. Define “osmotic pressure.”

Answer:

The pressure required to stop the osmotic flow of water across a membrane.

15. What is the difference between passive and active transport?

Answer:

- **Passive transport** does not require energy (e.g., diffusion, osmosis).
- **Active transport** requires energy to move substances against a concentration gradient.

16. What is the pH range of acidic substances?

Answer:

0-6

17. What is the pH range of alkaline substances?

Answer:

8-14

18. What is the normal pH of human blood?

Answer:

7.4 (slightly alkaline)

19. What is meant by the term "mitosis"?

Answer:

Mitosis is the process of cell division that results in two genetically identical daughter cells.

20. What are the phases of mitosis?

Answer:

Prophase, metaphase, anaphase, telophase

21. What is the difference between mitosis and meiosis?

Answer:

- Mitosis results in two identical diploid cells.
- Meiosis results in four non-identical haploid cells (gametes).

22. What is the role of the circulatory system?

Answer:

It transports oxygen, nutrients, and waste products throughout the body.

23. What is the function of hemoglobin in red blood cells?

Answer:

Hemoglobin binds to oxygen in the lungs and carries it to the tissues.

24. What is the role of the small intestine in digestion?

Answer:

The small intestine is responsible for the absorption of nutrients from digested food.

25. What are villi and what is their function?

Answer:

Villi are finger-like projections in the small intestine that increase surface area for nutrient absorption.

26. What is the main purpose of the respiratory system?

Answer:

To exchange gases (oxygen and carbon dioxide) between the body and the environment.

27. Define "homeostasis."

Answer:

The process by which the body maintains a stable internal environment.

28. What is the function of the kidneys?

Answer:

The kidneys filter waste from the blood, regulate water balance, and produce urine.

29. What are hormones?

Answer:

Chemical messengers that regulate various bodily functions.

30. What is the role of insulin in the body?

Answer:

Insulin helps regulate blood sugar levels by promoting the uptake of glucose into cells.

31. What are the stages of the cell cycle?

Answer:

Interphase (G1, S, G2), mitosis (prophase, metaphase, anaphase, telophase), cytokinesis

32. What is the purpose of meiosis in sexual reproduction?

Answer:

Meiosis reduces the chromosome number by half to form haploid gametes (sperm and egg).

33. Calculate the magnification of a microscope with an objective lens of 40x and an eyepiece lens of 10x.

Answer:

Total magnification = $40 \times 10 = 400$ times

34. What is a nucleotide?

Answer:

A nucleotide is the basic building block of nucleic acids (DNA and RNA).

35. What is the structure of DNA?

Answer:

DNA is a double helix composed of two strands of nucleotides.

36. What is the base-pairing rule in DNA?

Answer:

Adenine (A) pairs with Thymine (T), and Cytosine (C) pairs with Guanine (G).

37. What is a genetic mutation?

Answer:

A mutation is a change in the DNA sequence, which can lead to variations in traits.

38. What is the function of chloroplasts?

Answer:

Chloroplasts are the site of photosynthesis in plant cells.

39. What is the role of the liver in metabolism?

Answer:

The liver detoxifies harmful substances, stores glycogen, and synthesizes proteins.

40. What is the structure of a protein?**Answer:**

Proteins are made up of amino acids arranged in a specific sequence to form polypeptides.

41. What is diffusion?**Answer:**

Diffusion is the movement of molecules from an area of high concentration to an area of low concentration.

42. What is osmosis?**Answer:**

Osmosis is the movement of water molecules across a semipermeable membrane from a region of lower solute concentration to higher solute concentration.

43. What is the role of white blood cells?**Answer:**

White blood cells defend the body against infections and foreign invaders.

44. How does the body respond to high blood glucose?**Answer:**

The pancreas releases insulin to help cells absorb glucose and lower blood sugar levels.

45. How many pairs of ribs do humans have?**Answer:**

12 pairs of ribs

46. Define “ecosystem.”**Answer:**

An ecosystem is a community of organisms interacting with each other and their environment.

47. What is the role of decomposers in an ecosystem?**Answer:**

Decomposers break down dead organic material, recycling nutrients back into the soil.

48. What is a food chain?**Answer:**

A food chain shows the flow of energy from one organism to another in an ecosystem.

49. What is the greenhouse effect?**Answer:**

The greenhouse effect is the trapping of heat by gases in the Earth's atmosphere, leading to global warming.

50. What is the function of the stomata in plants?**Answer:**

Stomata are pores on the surface of leaves that allow gas exchange (oxygen and carbon dioxide) and transpiration (water loss).

51. What is meant by “natural selection”?**Answer:**

Natural selection is the process by which organisms better adapted to their environment are more likely to survive and reproduce.

52. Define "species."

Answer:

A species is a group of organisms that can interbreed and produce fertile offspring.

53. What is a food web?

Answer:

A food web is a complex network of interconnected food chains in an ecosystem.

54. What is the nitrogen cycle?

Answer:

The nitrogen cycle is the process by which nitrogen is converted between different chemical forms, primarily through the actions of bacteria.

55. What is the main function of the excretory system?

Answer:

The excretory system removes waste products from the body, including urine production by the kidneys.

56. What is the difference between asexual and sexual reproduction?

Answer:

Asexual reproduction involves one parent and results in genetically identical offspring, while sexual reproduction involves two parents and results in genetically diverse offspring.

57. What is a fertilized egg called?

Answer:

Zygote

58. What is the role of the adrenal glands?

Answer:

The adrenal glands produce hormones such as adrenaline, which help the body respond to stress.

59. What is the function of the pancreas in digestion?

Answer:

The pancreas produces digestive enzymes and insulin to regulate blood sugar levels.

60. How is energy transferred in an ecosystem?

Answer:

Energy is transferred from producers to consumers through feeding relationships, such as in food chains and food webs.