

## 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
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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%
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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
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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

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**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

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**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

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

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

**Answer:**

B) 23

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**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
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**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:**

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

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

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

**Answer:**

- A) 3:1
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**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

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**1. What is the basic unit of life?**

**Answer:**

Cell

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**2. What is the function of the mitochondria?**

**Answer:**

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

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

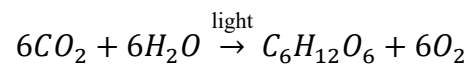
**Answer:**

Photosynthesis

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**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.

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

**Answer:**

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

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**7. How many chromosomes do humans have?**

**Answer:**

46 chromosomes (23 pairs)

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**8. Define the term "genotype."**

**Answer:**

The genetic makeup of an organism.

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**9. Define "phenotype."**

**Answer:**

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

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**10. What is a dominant allele?**

**Answer:**

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

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**11. What is the function of ribosomes?**

**Answer:**

They are the site of protein synthesis.

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**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).

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**13. What are enzymes?**

**Answer:**

Proteins that catalyze biochemical reactions, speeding up the process.

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**14. Define “osmotic pressure.”**

**Answer:**

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

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**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.
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**16. What is the pH range of acidic substances?**

**Answer:**

0-6

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**17. What is the pH range of alkaline substances?**

**Answer:**

8-14

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**18. What is the normal pH of human blood?**

**Answer:**

7.4 (slightly alkaline)

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

**Answer:**

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

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**20. What are the phases of mitosis?**

**Answer:**

Prophase, metaphase, anaphase, telophase

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**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).
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**22. What is the role of the circulatory system?**

**Answer:**

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

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**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.

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**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.

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**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.

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

**Answer:**

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

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**27. Define "homeostasis."**

**Answer:**

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

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**28. What is the function of the kidneys?**

**Answer:**

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

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**29. What are hormones?**

**Answer:**

Chemical messengers that regulate various bodily functions.

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**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.

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**31. What are the stages of the cell cycle?**

**Answer:**

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

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**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).

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**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

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**34. What is a nucleotide?**

**Answer:**

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

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**35. What is the structure of DNA?**

**Answer:**

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

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

**Answer:**

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

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**37. What is a genetic mutation?**

**Answer:**

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

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**38. What is the function of chloroplasts?**

**Answer:**

Chloroplasts are the site of photosynthesis in plant cells.

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

**Answer:**

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

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

**Answer:**

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

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**41. What is diffusion?**

**Answer:**

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

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**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.

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

**Answer:**

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

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**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.

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

**Answer:**

12 pairs of ribs

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**46. Define “ecosystem.”**

**Answer:**

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

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

**Answer:**

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

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

**Answer:**

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

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**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.

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**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).

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**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.

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**52. Define "species."**

**Answer:**

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

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**53. What is a food web?**

**Answer:**

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

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**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.

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**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.

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**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.

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**57. What is a fertilized egg called?**

**Answer:**

Zygote

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**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.

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

**Answer:**

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

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**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.