

GRADE 10 BIOLOGY QUIZ WITH ANSWERS

QUIZ OF 50 QUESTIONS WITH BOLD ANSWERS ON LIVING ORGANISMS AND LIFE PROCESSES AND CELL STRUCTURE AND ORGANIZATION

1. Define a living organism.
A living organism is an entity that exhibits the characteristics of life, such as growth, reproduction, response to stimuli, metabolism, excretion, movement, and adaptation.
2. Explain the process of photosynthesis.
Photosynthesis is the process by which green plants, algae, and some bacteria convert light energy, carbon dioxide, and water into glucose and oxygen, using chlorophyll.
3. What is respiration, and why is it important for living organisms?
Respiration is the process by which organisms convert glucose into energy (ATP). It is essential for powering cellular processes and maintaining life.
4. Describe the difference between autotrophs and heterotrophs.
Autotrophs produce their own food using sunlight or chemicals (e.g., plants), while heterotrophs depend on other organisms for food (e.g., animals).
5. What is homeostasis, and provide an example in humans?
Homeostasis is the maintenance of a stable internal environment. An example is the regulation of body temperature in humans through sweating or shivering.
6. Explain the term "growth" in living organisms.
Growth refers to the permanent increase in size and dry mass of an organism due to cell division and enlargement.
7. What is the role of enzymes in life processes?
Enzymes act as biological catalysts that speed up chemical reactions essential for life processes, such as digestion and respiration.
8. List three differences between movement in plants and animals.
Plants move slowly, such as growth towards light, while animals exhibit rapid movement. Plant movement is often growth-related, while animals move using muscles. Plant movement is generally passive, while animals actively move to seek food or escape predators.
9. What is the significance of reproduction in living organisms?
Reproduction ensures the continuity of a species by producing offspring.
10. Describe the function of excretion in living organisms.
Excretion removes metabolic waste products and toxins from the body to maintain homeostasis.
11. What is the cell theory?
The cell theory states that all living organisms are made of cells, cells are the basic unit of structure and function in living things, and all cells arise from pre-existing cells.
12. What is the function of the cell membrane?
The cell membrane regulates the entry and exit of substances, protecting the cell and maintaining homeostasis.

13. Differentiate between prokaryotic and eukaryotic cells.
Prokaryotic cells lack a nucleus and membrane-bound organelles, while eukaryotic cells have a nucleus and organelles.
14. Name the organelle responsible for energy production in cells.
Mitochondria.
15. What is the function of ribosomes?
Ribosomes are responsible for protein synthesis.
16. Describe the role of the nucleus in a cell.
The nucleus controls cellular activities and contains the genetic material (DNA).
17. What is the function of the chloroplast in plant cells?
Chloroplasts are responsible for photosynthesis, converting light energy into chemical energy.
18. How do vacuoles differ in plant and animal cells?
Plant cells have large, central vacuoles for storing water and nutrients, while animal cells have small or no vacuoles.
19. What is the function of the cell wall in plant cells?
The cell wall provides structure, support, and protection to plant cells.
20. Define osmosis.
Osmosis is the movement of water molecules across a semi-permeable membrane from an area of low solute concentration to high solute concentration.
21. What is diffusion?
Diffusion is the passive movement of molecules from an area of higher concentration to an area of lower concentration.
22. Explain the process of active transport in cells.
Active transport is the movement of substances against a concentration gradient, requiring energy (ATP).
23. What is the primary function of the Golgi apparatus?
The Golgi apparatus modifies, packages, and transports proteins and lipids within the cell.
24. Describe the structure of DNA.
DNA is a double-helix molecule composed of nucleotides, each containing a sugar, phosphate, and nitrogenous base.
25. What is the function of lysosomes?
Lysosomes break down waste materials and cellular debris using enzymes.
26. How does the cytoplasm contribute to cell function?
The cytoplasm is a gel-like substance where cellular processes and reactions occur.
27. What is the role of the endoplasmic reticulum?
The endoplasmic reticulum is involved in the synthesis and transport of proteins (rough ER) and lipids (smooth ER).
28. What is the difference between multicellular and unicellular organisms?
Multicellular organisms consist of many cells working together, while unicellular organisms are made up of a single cell.
29. What is a stem cell?
A stem cell is an undifferentiated cell capable of dividing and developing into specialized cell types.
30. Define tissue in biology.
A tissue is a group of similar cells that work together to perform a specific function.
31. What is the function of xylem in plants?
Xylem transports water and minerals from roots to other parts of the plant.

32. What is the function of phloem in plants?
Phloem transports nutrients, particularly sugars, throughout the plant.
33. Describe the process of mitosis.
Mitosis is the division of a cell's nucleus into two genetically identical daughter nuclei.
34. What is the significance of meiosis?
Meiosis produces gametes (sex cells) with half the genetic material, ensuring genetic diversity in offspring.
35. What is the role of centrioles in animal cells?
Centrioles play a role in organizing the spindle fibers during cell division.
36. Explain the term "selectively permeable membrane."
A selectively permeable membrane allows some substances to pass while blocking others.
37. What is plasmolysis?
Plasmolysis is the process in which a plant cell loses water and the cell membrane pulls away from the cell wall.
38. How do red blood cells transport oxygen?
Red blood cells use hemoglobin to bind and transport oxygen to body tissues.
39. What is the function of white blood cells?
White blood cells protect the body by fighting infections and pathogens.
40. Define metabolism.
Metabolism is the sum of all chemical reactions occurring in an organism to maintain life.
41. What is the importance of water in living organisms?
Water is essential for biochemical reactions, temperature regulation, and nutrient transport.
42. What are the characteristics of a virus?
Viruses are non-living particles that require a host cell to reproduce and consist of genetic material surrounded by a protein coat.
43. What are stomata, and what is their function?
Stomata are small openings on plant leaves that regulate gas exchange and water loss.
44. What is the function of ATP in cells?
ATP stores and provides energy for cellular activities.
45. How do cilia and flagella differ?
Cilia are short, hair-like structures for movement or sensory functions, while flagella are long, whip-like structures used for propulsion.
46. What is the role of hormones in living organisms?
Hormones act as chemical messengers that regulate physiological processes.
47. What is the function of the skeletal system in animals?
The skeletal system provides structure, protection, and support and facilitates movement.
48. What are alveoli, and what is their function?
Alveoli are tiny air sacs in the lungs where gas exchange occurs.
49. What is the importance of chlorophyll in plants?
Chlorophyll absorbs light energy for photosynthesis.
50. What is an organ system?
An organ system is a group of organs that work together to perform a specific function.