IGCSE Biology Practice Test 12

60 original multiple-choice questions covering all 21 Cambridge IGCSE Biology 0610 topics. Choose one answer for each question. The full answer key is on the last page — worked explanations for every question are free on the test page at QuaidianPoint.com.

Name: _____ Class: _____ Score: _____ / 60

Characteristics and classification of living organisms

Q1. Which life process involves the removal of waste products of metabolism from the body?

(A) Nutrition
(B) Excretion
(C) Respiration
(D) Growth

Q2. Which feature distinguishes a virus from a bacterium?

(A) A virus is not made of cells and can only reproduce inside a host cell
(B) A virus has a nucleus and a cell wall
(C) A virus can feed by photosynthesis
(D) A virus is always larger than a bacterium and easily visible under a light microscope

Q3. An animal has a backbone, lays eggs with shells on land, and has dry scaly skin. Which class does it belong to?

(A) Amphibian
(B) Fish
(C) Reptile
(D) Bird

Organisation of the organism

Q4. Which organelle controls the activities of the cell and contains the genetic material?

(A) Vacuole
(B) Mitochondrion
(C) Ribosome
(D) Nucleus

Q5. The stomach, intestines and liver work together as part of which organ system?

(A) Circulatory system
(B) Nervous system
(C) Respiratory system
(D) Digestive system

Q6. What is the function of the large central vacuole in a mature plant cell?

(A) To carry out photosynthesis
(B) To store cell sap and keep the cell firm
(C) To produce energy by respiration
(D) To join amino acids into proteins during protein synthesis

Movement into and out of cells

Q7. A plant cell placed in a concentrated salt solution becomes plasmolysed. What has happened?

(A) Water has entered the cell by osmosis and the cell has burst
(B) Water has left the cell by osmosis and the cytoplasm has pulled away from the wall
(C) Salt has entered the cell by active transport
(D) The cell wall has dissolved in the salt solution

Q8. Which statement correctly describes diffusion?

(A) The movement of water through a partially permeable membrane
(B) The movement of ions against a concentration gradient using energy
(C) The net movement of particles from a higher to a lower concentration
(D) The movement of large proteins through the cell wall

Q9. Root hair cells absorb mineral ions from very dilute soil water. Which process allows this, and why is it needed?

(A) Active transport, because ions must be taken up against a concentration gradient
(B) Osmosis, because ions dissolve in water
(C) Diffusion, because ions move freely through the membrane
(D) Transpiration, because water pulls ions upwards

Biological molecules

Q10. A food sample gives a purple colour with biuret solution. Which nutrient is present?

(A) Reducing sugar
(B) Starch
(C) Protein
(D) Vitamin C

Q11. Which carbohydrate is the main storage compound in animal cells?

(A) Cellulose
(B) Maltose
(C) Starch
(D) Glycogen

Q12. Which statement describes how an enzyme works?

(A) The substrate fits into the active site, the reaction happens, and the enzyme is unchanged
(B) The enzyme is broken down into products at the end of the reaction
(C) The enzyme changes the products into a different substrate
(D) The enzyme binds permanently to the substrate

Enzymes

Q13. An enzyme solution is boiled, cooled, and then mixed with its substrate. No reaction occurs. What is the best explanation?

(A) The substrate was destroyed by boiling
(B) Boiling denatured the enzyme, changing its active site
(C) Cooling the enzyme stopped all molecular movement
(D) The enzyme needs light to work

Q14. Pepsin works best in strongly acidic conditions in the stomach. What does this show about pepsin?

(A) Its optimum pH is low
(B) It is destroyed by acid
(C) It works only in the mouth
(D) It digests fats, not proteins

Q15. Why does the rate of an enzyme reaction increase when the substrate concentration is raised, up to a point?

(A) The enzyme molecules become larger
(B) The temperature of the mixture rises during the reaction
(C) More active sites become occupied more often
(D) The pH of the mixture changes

Plant nutrition

Q16. Which mineral ion is needed to make chlorophyll, so a deficiency causes yellow leaves?

(A) Calcium
(B) Phosphate
(C) Potassium
(D) Magnesium

Q17. A leaf is tested for starch after being kept in darkness for two days. The test is negative. What does this show?

(A) The leaf cannot make starch at all
(B) The leaf has no chloroplasts
(C) The leaf respired but made no new starch
(D) Starch in the leaf was used up because photosynthesis could not occur

Q18. Which part of a leaf contains most of the chloroplasts for photosynthesis?

(A) The upper epidermis, a transparent protective layer
(B) The palisade mesophyll
(C) The xylem vessels
(D) The lower epidermis

Human nutrition

Q19. Where does chemical digestion of protein begin in humans?

(A) In the stomach, by pepsin
(B) In the mouth, by amylase
(C) In the small intestine, by lipase
(D) In the large intestine, by bacteria

Q20. A person eats a meal rich in starch. Which sequence shows the main stages of its digestion and absorption?

(A) Stomach acid breaks starch, then it is absorbed in the colon
(B) Lipase breaks starch in the ileum, then it enters the blood
(C) Amylase breaks starch to maltose, maltase to glucose, then glucose is absorbed in the ileum
(D) Bile breaks starch to glucose, then it is absorbed in the stomach

Q21. Which vitamin is needed for the absorption of calcium and for healthy teeth and bones?

(A) Vitamin D
(B) Vitamin A
(C) Vitamin C
(D) Vitamin B

Transport in plants

Q22. Which cells in a leaf control the opening and closing of stomata?

(A) Palisade cells
(B) Epidermal cells
(C) Guard cells
(D) Phloem cells

Q23. Sucrose made in a leaf is carried to a growing root. Which tissue carries it, and in which direction?

(A) Xylem, upwards only
(B) Xylem, in both directions through the plant
(C) Phloem, upwards only
(D) Phloem, from source to sink

Q24. A plant is placed in humid air with still conditions. What happens to transpiration and why?

(A) It increases, because humidity opens stomata wider
(B) It decreases, because the water vapour gradient is smaller
(C) It stops, because the roots stop absorbing water
(D) It increases, because still air holds more water

Transport in animals

Q25. Which chamber of the heart receives deoxygenated blood from the body?

(A) Left atrium
(B) Right atrium
(C) Left ventricle
(D) Right ventricle

Q26. What is the role of valves in veins?

(A) To prevent the backflow of blood
(B) To pump blood towards the heart by contraction
(C) To allow exchange with tissues
(D) To carry oxygenated blood only

Q27. Tissue fluid is formed when plasma leaks from capillaries. How is most of it returned to the blood?

(A) It drains into the arteries directly from the tissues
(B) It evaporates from the skin
(C) It re-enters capillaries and lymph vessels
(D) It is excreted by the kidneys at once

Diseases and immunity

Q28. Which statement describes active immunity?

(A) Antibodies are injected directly into the blood
(B) A baby receives antibodies in breast milk
(C) Antibodies are borrowed from another person
(D) The body makes its own antibodies and memory cells

Q29. Cholera bacteria are spread mainly by which route?

(A) Droplets in coughs and sneezes
(B) Bites from infected insects
(C) Direct contact with skin
(D) Water contaminated with faeces

Q30. A white blood cell engulfs a bacterium and digests it. What is this process called?

(A) Vaccination
(B) Phagocytosis
(C) Agglutination
(D) Fermentation

Gas exchange in humans

Q31. Which structure prevents food from entering the windpipe when swallowing?

(A) The epiglottis
(B) The diaphragm
(C) The alveolus
(D) The bronchiole

Q32. In the lungs, carbon dioxide diffuses from the blood into the alveoli because of which gradient?

(A) Oxygen is higher in the blood than in the alveoli
(B) Carbon dioxide is equal on both sides
(C) Carbon dioxide is higher in the blood than in the alveolar air
(D) Nitrogen is higher in the alveolar air

Q33. Why do the walls of the trachea contain rings of cartilage?

(A) To keep the airway open during breathing movements
(B) To absorb oxygen into the blood
(C) To produce mucus for trapping dust
(D) To contract and push air into the lungs

Respiration

Q34. Which substance is produced by anaerobic respiration in yeast but not in human muscle?

(A) Lactic acid
(B) Water
(C) Ethanol
(D) Carbon dioxide only

Q35. During heavy exercise, breathing rate and heart rate both rise. What is the main reason?

(A) To remove excess glucose from the blood
(B) To cool the muscles by sweating
(C) To reduce the amount of oxygen used
(D) To supply more oxygen and remove carbon dioxide faster

Q36. Which organelle is the site of aerobic respiration?

(A) Chloroplast, the site of photosynthesis
(B) Mitochondrion
(C) Nucleus
(D) Ribosome

Excretion in humans

Q37. Which of these is an excretory product removed by the lungs?

(A) Urea
(B) Carbon dioxide
(C) Excess salts
(D) Bile pigments, which colour the faeces

Q38. In the kidney tubule, which substance is normally reabsorbed completely so that none appears in urine?

(A) Glucose
(B) Urea
(C) Excess water
(D) Sodium ions

Coordination and response

Q39. Which sequence correctly shows the pathway of a simple spinal reflex?

(A) Effector, motor neurone, spinal cord, sensory neurone, receptor
(B) Receptor, motor neurone, spinal cord, sensory neurone, effector
(C) Receptor, sensory neurone, spinal cord, motor neurone, effector
(D) Sensory neurone, receptor, motor neurone, spinal cord, effector

Q40. Adrenaline is released in a stressful situation. Which effect does it have?

(A) It lowers blood glucose and slows the heart
(B) It constricts the pupils and slows breathing
(C) It reduces blood flow to the muscles
(D) It increases heart rate and blood glucose concentration

Drugs

Q41. Nicotine in tobacco smoke affects the body in which way?

(A) It coats the lungs with tar
(B) It reduces oxygen by binding haemoglobin
(C) It paralyses the cilia in the airways
(D) It is addictive and raises heart rate and blood pressure

Q42. Why should antibiotics not be taken for a common cold?

(A) The cold virus is killed by rest alone
(B) Colds are caused by viruses, which antibiotics cannot kill
(C) Antibiotics weaken the immune system permanently
(D) Colds are caused by fungi, not bacteria

Reproduction

Q43. Which part of a flower receives pollen during pollination?

(A) The stigma
(B) The ovule
(C) The filament
(D) The style

Q44. What is the main advantage of sexual reproduction over asexual reproduction?

(A) Offspring are produced more quickly
(B) No partner is needed
(C) Offspring show variation, helping adaptation to changing conditions
(D) All offspring are genetically identical to the parent

Q45. After fertilisation in a flowering plant, what does the ovule become?

(A) A seed
(B) A fruit
(C) A pollen grain
(D) An anther

Inheritance

Q46. What is the genotype of an organism that is heterozygous for a trait controlled by alleles R and r?

(A) RR
(B) rr
(C) Rr
(D) R only

Q47. A man with blood group B marries a woman with blood group O. Their child has blood group O. What must the man's genotype be?

(A) BB only
(B) AB
(C) OO
(D) BO

Q48. Which process produces genetically different gametes by halving the chromosome number?

(A) Mitosis
(B) Meiosis
(C) Fertilisation
(D) Binary fission

Variation and selection

Q49. A plant grown in shade develops larger leaves than the same species grown in bright light. This is an example of which kind of variation?

(A) Genetic variation only
(B) Environmental variation
(C) Discontinuous variation
(D) Mutation

Q50. Which of these is an example of discontinuous variation in humans?

(A) Blood group
(B) Height
(C) Body mass
(D) Skin colour shade

Q51. Pesticide resistance in insects is an example of which process?

(A) Artificial selection by farmers
(B) Genetic engineering
(C) Natural selection
(D) Asexual reproduction

Organisms and their environment

Q52. Which organism is a decomposer in a woodland food web?

(A) An oak tree, a large producer in the woodland
(B) A rabbit
(C) A fox
(D) A fungus breaking down dead leaves

Q53. In a pyramid of biomass, why is the producer level usually the largest?

(A) Producers reproduce fastest
(B) Producers are the largest organisms
(C) Consumers eat only producers
(D) Energy is lost at each level, so less biomass can be supported above

Q54. Which factor is a biotic factor in a pond habitat?

(A) Water temperature, an abiotic factor in the pond
(B) The number of predators present
(C) Light intensity
(D) pH of the water

Human influences on ecosystems

Q55. Which farming practice can cause eutrophication in a nearby lake?

(A) Excess fertiliser washing into the water
(B) Crop rotation with legumes, which improves soil nitrogen
(C) Leaving field margins uncut
(D) Using drip irrigation

Q56. Which of these is a non-renewable resource whose use contributes to climate change?

(A) Wind energy
(B) Solar energy
(C) Coal
(D) Tidal energy

Q57. Why is conserving a gene pool important for an endangered species?

(A) A larger gene pool gives more variation for adaptation and survival
(B) A larger gene pool makes all individuals identical
(C) A larger gene pool stops all mutations
(D) A larger gene pool prevents any breeding

Biotechnology and genetic modification

Q58. In a fermenter used to grow yeast for bread making, which condition must be controlled?

(A) The colour of the vessel
(B) The shape of the yeast cells
(C) Temperature, pH and nutrient supply
(D) The amount of sunlight on the vessel

Q59. A crop is genetically modified to resist a herbicide. What is a possible benefit to farmers?

(A) The crop needs no water at all
(B) The crop grows in complete darkness without any light
(C) The crop produces its own fertiliser
(D) Weeds can be killed without harming the crop

Q60. Which step is part of producing a genetically modified bacterium that makes insulin?

(A) Heating the bacteria until they die
(B) Inserting the human insulin gene into a plasmid, then into the bacterium
(C) Removing all DNA from the bacterium
(D) Feeding the bacteria insulin tablets

Answer Key

Q1: B	Q11: D	Q21: A	Q31: A	Q41: D	Q51: C
Q2: A	Q12: A	Q22: C	Q32: C	Q42: B	Q52: D
Q3: C	Q13: B	Q23: D	Q33: A	Q43: A	Q53: D
Q4: D	Q14: A	Q24: B	Q34: C	Q44: C	Q54: B

Q5: D	Q15: C	Q25: B	Q35: D	Q45: A	Q55: A
Q6: B	Q16: D	Q26: A	Q36: B	Q46: C	Q56: C
Q7: B	Q17: D	Q27: C	Q37: B	Q47: D	Q57: A
Q8: C	Q18: B	Q28: D	Q38: A	Q48: B	Q58: C
Q9: A	Q19: A	Q29: D	Q39: C	Q49: B	Q59: D
Q10: C	Q20: C	Q30: B	Q40: D	Q50: A	Q60: B

Worked explanations for all 60 questions: quaidianpoint.com/igcse-biology-practice-test-12/