Myfuture CBC Revision

biology - Grade 10

Question Paper

1. What is the role of the lymphatic system in transport?

A. To carry oxygen to body cells

B. To pump blood under high pressure

C. To return excess tissue fluid to the bloodstream and transport fats from the
D. To secrete hormones for digestion

2. Which observation would indicate that a plant tissue is carrying out anaerobic respiration rather than aerobic respiration?

A. High oxygen consumption and low ethanol production

B. Increase in ATP production compared to aerobic conditions

C. Accumulation of ethanol or lactic acid and low oxygen consumption
D. No carbon dioxide produced

3. Which part of a leaf provides the greatest surface area for gas exchange inside the leaf?

A. Leaf veins only

B. Upper epidermis

C. Air spaces among spongy mesophyll cells

D. Palisade cells tightly packed

4. Which process moves food along the gut using coordinated muscle contractions?

A. Osmosis

B. Peristalsis

C. Filtration

D. Diffusion

5. In an experiment to show that germinating seeds respire, which observation would indicate respiration is occurring?

A. Absorption of oxygen from a closed container

B. Seeds turning green

C. Decrease in temperature around seeds

D. Immediate growth of leaves

6. Which adaptation helps desert plants reduce water loss while still allowing some gas exchange?

A. Thick cuticle and sunken stomata

B. No cuticle and exposed stomata

C. Aerenchyma-filled leaves

D. Large thin leaves with many stomata

7. Which valves are located between the ventricles and the major arteries leaving the heart?

A. Semilunar valves (aortic and pulmonary valves)

B. Capillary sphincters

C. Venous valves

D. Atrioventricular valves

8. Freshwater bony fish living in Kenyan lakes face a challenge of excess water. How do they cope?

A. They stop excreting urine entirely

B. They breathe air to remove excess water

C. They excrete large amounts of dilute urine and actively take up salts at the gills
D. They excrete very concentrated urine and drink large amounts of water

9. In microscopy, what does 'resolution' refer to?

A. The ability to distinguish two close points as separate

B. The amount of stains used to view a specimen

C. How much larger an object appears under the microscope

D. The brightness of the image

10. Where does aerobic respiration primarily occur in plant cells?

A. Cell wall

B. Chloroplasts

C. Mitochondria

D. Vacuole

11. Which of the following best describes diffusion in plant gaseous exchange?

A. Bulk movement of air due to wind

B. Movement of gas molecules from high to low concentration without energy

C. Movement of gas molecules from low to high concentration using energy

D. Active transport of gases across membranes

12. How does a decrease in atmospheric CO_2 around a leaf affect stomatal behaviour in many plants?

A. Stomata open wider to allow more CO_2 to enter

B. Guard cells die immediately

C. Stomata permanently disappear

D. Stomata close because CO_2 is needed to open them

13. Which respiratory surface is especially important for gas exchange in many amphibians?

A. Gills only

B. Moist skin and lungs

C. Scales

D. Feathers

14. Which of the following is NOT a component of a nucleotide (the building block of DNA and RNA)?

A. A nitrogenous base

B. A phosphate group

C. Amino acid

D. A pentose sugar

15. Which molecule is a structural polysaccharide found in plant cell walls that provides rigidity and is not digestible by human gut enzymes?

A. Starch

B. Cellulose

C. Amylopectin

D. Glycogen

16. What is the primary function of stomata on a leaf?

A. Allow entry and exit of gases and control transpiration

B. Absorb minerals from the air

C. Store food for the plant

D. Transport water from roots to leaves

17. What is the main function of lysosomes in animal cells?

A. Produce ATP through cellular respiration

B. Store genetic information

C. Carry out photosynthesis to make glucose

D. Digest wornout organelles and foreign particles using enzymes

18. Which organelle is primarily responsible for producing ATP during aerobic respiration in plant cells?

A. Nucleus

B. Chloroplast

C. Vacuole

D. Mitochondrion

19. Which gas is produced during anaerobic respiration (fermentation) in plant cells when oxygen is limited?

A. Ozone

B. Ethanol and carbon dioxide (in some plants)

C. Hydrogen

D. Nitrogen gas

20. What determines a person's ABO blood group?

A. Specific antigens on the surface of red blood cells

B. The amount of haemoglobin per cell

C. The concentration of plasma proteins

D. The number of red blood cells in the blood

21. Which of these is a structural difference between DNA and RNA?

A. DNA contains thymine; RNA contains uracil

B. DNA uses the sugar ribose; RNA uses deoxyribose

C. DNA is single-stranded; RNA is always double-stranded

D. DNA contains uracil; RNA contains thymine

22. In human lungs, where are exchange surfaces kept moist and thin to allow diffusion?

A. On the outer chest wall

B. On alveolar epithelium with a moist thin surfactant layer

C. Inside the rib bones

D. Only on the trachea lined with cartilage

23. During anaerobic respiration (fermentation) in plant cells (e.g., waterlogged roots), which products are commonly formed?

A. Carbon dioxide and water only

B. Ammonia and oxygen

C. Oxygen and glucose

D. Ethanol and carbon dioxide

24. Which class of lipid is the main storage form of energy in animal tissues?

A. Steroids

B. Triglycerides (fats)

C. Phospholipids

D. Waxes

25. What is the basic building block (monomer) of proteins?

A. Amino acids

B. Monosaccharides

C. Nucleotides

D. Fatty acids

26. How do most bacteria reproduce?

A. By mitosis with spindle formation like plant cells

B. By binary fission, where one cell divides into two identical cells

C. By forming seeds that grow into new bacteria

D. By photosynthesis followed by cell fusion

27. Which macromolecule is primarily used by cells for short-term energy and quick release?

A. Lipids

B. Proteins

C. Carbohydrates

D. Nucleic acids

28. What is the primary function of the cell (plasma) membrane?

A. Store genetic information

B. Control movement of substances into and out of the cell

C. Produce energy by respiration

D. Provide rigid support and shape

29. Which feeding category describes animals that eat both plants and other animals?

A. Detritivores

B. Herbivores

C. Carnivores

D. Omnivores

30. Which test indicates the presence of reducing sugars like glucose?

A. Emulsion test

B. Iodine test

C. Biuret test

D. Benedict's test

31. Which organelle is mainly involved in modifying, sorting and packaging proteins for secretion?

A. Golgi apparatus

B. Mitochondrion

C. Ribosome

D. Nucleus

32. Which of the following describes the effect of high temperature on most enzymes?

A. It permanently increases their activity for all reactions

B. It converts enzymes into carbohydrates

C. It increases substrate concentration

D. It causes denaturation and loss of enzyme activity

33. Which vitamin deficiency causes scurvy and is linked to poor intake of fruits like oranges or vegetables?

A. Vitamin D

B. Vitamin B12

C. Vitamin A

D. Vitamin C

34. Which factor shifts the oxygen-haemoglobin dissociation curve to the right (Bohr effect), making haemoglobin release more oxygen to tissues?

A. Increased temperature, increased CO_2 and lower pH

B. Absence of 2,3-BPG in red blood cells

C. Lower temperature and low CO_2

D. Decreased acidity (higher pH)

35. Which gas is produced as a direct result of glycolysis under anaerobic conditions in plant cells?

A. Nitrogen dioxide

B. Chlorine gas

C. Carbon dioxide

D. Oxygen

36. Which mineral is most important for healthy bones and teeth and is found in milk and green leafy vegetables?

A. Iodine

B. Iron

C. Sodium

D. Calcium

37. Which substance carries most oxygen in human blood?

A. Dissolved oxygen in plasma

B. Carbon dioxide bound to plasma

C. Haemoglobin in red blood cells

D. Plasma proteins

38. Which fatty acid type has no double bonds between carbon atoms and is usually solid at room temperature?

A. Polyunsaturated fatty acid

B. Trans fat only

C. Saturated fatty acid

D. Monounsaturated fatty acid

39. During the night, plants typically close most stomata. What is the main reason for this?

A. To conserve water and because photosynthesis does not occur
B. To stop root respiration

C. To allow more oxygen to enter

D. To increase uptake of nitrogen

40. Which type of biomolecule stores genetic information in cells?

A. Nucleic acids

B. Lipids

C. Proteins

D. Carbohydrates

41. Where does ultrafiltration of blood occur in the kidney (the first step in urine formation)?

A. Glomerulus within Bowman's capsule

B. Collecting duct

C. Proximal convoluted tubule

D. Loop of Henle

42. What is meant by 'assimilation' in animal nutrition?

A. Use of absorbed nutrients for growth, repair and energy

B. Absorption of nutrients into blood

C. Chemical breakdown of food in the gut lumen

D. Removal of undigested food as faeces

43. What is the main function of dietary fibre in the animal digestive system?

A. Increase absorption of sugars

B. Provide high energy per gram

C. Supply essential amino acids

D. Aid peristalsis and prevent constipation

44. What is vital capacity?

A. The maximum volume of air that can be exhaled after a maximum inhalation
B. The volume of air left in the lungs after normal exhalation

C. The amount of air exchanged during a single normal breath
D. The maximum volume of air that can be inhaled after a normal inhalation

45. What substance forms a tough insoluble mesh that stabilises a blood clot?

A. Glucose

B. Haemoglobin

C. Fibrin

D. Albumin

46. Which is a main function of blood plasma?

A. Forming blood clots directly

B. Transporting dissolved nutrients, hormones and waste products
C. Carrying oxygen via haemoglobin

D. Destroying bacteria by phagocytosis

47. Which chemical equation represents aerobic respiration of glucose in plant cells (simplified)?

A. Glucose Ethanol + Carbon dioxide + Energy

B. Carbon dioxide + Water + Light Glucose + Oxygen

C. Oxygen Glucose + Carbon dioxide

D. Glucose + Oxygen Carbon dioxide + Water + Energy (ATP)

48. Why do some plants open stomata at night (CAM plants) instead of during the day?

A. To maximize oxygen uptake for respiration

B. To avoid herbivores that feed during the day

C. To take in CO_2 at night to reduce water loss in hot, dry climates
D. To absorb nutrients from the air

49. Which ion is essential for muscle contraction and also important for strong bones and teeth?

A. Sodium (Na^+)

B. Potassium (K^+)

C. Chloride (Cl^-)

D. Calcium (Ca^{2+})

50. How does living at high altitude (e.g., in mountain regions) affect red blood cell numbers?

A. Platelets multiply and replace red cells

B. White blood cell count increases but red cells stay the same

C. Red blood cell count decreases because oxygen is abundant

D. Red blood cell count increases to improve oxygen transport