Myfuture CBC Revision

biology - Grade 10

Question Paper

1. Which feature is characteristic of veins (as compared to arteries)?

A. Presence of valves to prevent backflow

B. Thicker muscular walls to withstand high pressure

C. Carry blood away from the heart under high pressure

D. Have very narrow lumens only

2. Which element is present in proteins but not in carbohydrates?

A. Hydrogen

B. Oxygen

C. Nitrogen

D. Carbon

3. What is the main function of the gizzard in birds like chickens?

A. Chemical digestion of proteins

B. Storing fats

C. Grinding and crushing food

D. Absorbing sugars

4. What mouthpart adaptation do nectar-feeding insects like butterflies have for taking up liquid food?

A. Mandibles for chewing

B. Gills

C. Radula

D. Proboscis

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

A. Omnivores

B. Detritivores

C. Herbivores

D. Carnivores

6. What is the role of the Casparian strip in the root endodermis?

A. It blocks the apoplast pathway forcing water and ions through living cells for selective

B. It produces root hairs

C. It conducts water rapidly to the cortex

D. It stores starch for the plant

7. Which organic compound contains long chains of carbon and hydrogen and is insoluble in water, making it important for waterproofing and energy storage?

A. Proteins

B. Carbohydrates

C. Nucleic acids

D. Lipids

8. In ruminant animals like cows, which stomach compartment hosts microbial fermentation of cellulose?

A. Abomasum

B. Omasum

C. Small intestine

D. Rumen

9. In woody stems, which structures allow gaseous exchange?

A. Lenticels

B. Phloem rays

C. Root hairs

D. Stomata on the bark

10. What is vital capacity?

A. The amount of air exchanged during a single normal breath

B. The volume of air left in the lungs after normal exhalation

C. The maximum volume of air that can be inhaled after a normal inhalation

D. The maximum volume of air that can be exhaled after a maximum inhalation

11. What are plasmodesmata and what is their role in transport?

A. Waxy layers on the root surface that repel water

B. Thickened cell wall areas that prevent water loss

C. Tiny channels between plant cells that allow cytoplasmic continuity for symplastic transport

D. Proteins that pump ions across membranes

12. Which mineral deficiency causes goitre due to insufficient thyroid hormone production and can affect people in regions with low iodine in soil?

A. Calcium

B. Iodine

C. Iron

D. Magnesium

13. Which statement correctly contrasts photosynthesis and respiration in plants?

A. Respiration requires light, photosynthesis does not

B. Photosynthesis uses CO2 and releases O2, respiration uses O2 and releases CO2

C. Both photosynthesis and respiration produce oxygen

D. Photosynthesis occurs only at night, respiration only during the day

14. Which substance carries most oxygen in human blood?

A. Haemoglobin in red blood cells

B. Carbon dioxide bound to plasma

C. Dissolved oxygen in plasma

D. Plasma proteins

15. What is the role of bile in digestion?

A. Break down proteins into amino acids

B. Emulsify fats to increase surface area for lipase

C. Digest carbohydrates into glucose

D. Neutralize stomach acid to stop digestion

16. What is the primary chemical component of the plant cell wall?

A. Cellulose

B. Peptidoglycan

C. Chitin

D. Phospholipids

17. Why do submerged aquatic plants often have thin leaves with large air spaces (aerenchyma)?

A. To increase water absorption from the air

B. To reduce buoyancy so they sink

C. To facilitate internal gaseous diffusion and buoyancy

D. To store large amounts of sugars

18. What feature distinguishes vessel elements from tracheids in xylem?

A. Vessel elements have thicker cell walls than tracheids

B. Vessel elements are living cells while tracheids are dead

C. Vessel elements transport food while tracheids transport water

D. Vessel elements have wide, open ends (perforation plates) forming continuous tubes

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

A. Oxygen and glucose

B. Ammonia and oxygen

C. Ethanol and carbon dioxide

D. Carbon dioxide and water only

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

A. Semilunar valves (aortic and pulmonary valves)

B. Venous valves

C. Atrioventricular valves

D. Capillary sphincters

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

A. Scales

B. Feathers

C. Gills only

D. Moist skin and lungs

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

A. Monosaccharides

B. Amino acids

C. Nucleotides

D. Fatty acids

23. What is the main role of companion cells in the phloem?

A. To regulate stomatal opening

B. To lignify and strengthen xylem vessels

C. To assist sieve tube elements with loading and unloading of sugars and metabolic support

D. To absorb water directly from the atmosphere

24. Which of these foods provides a good source of vitamin A important for eyesight and immunity?

A. Sugar

B. White rice

C. Carrots and sweet potatoes

D. Irish potatoes

25. What is pressure potential (turgor) in plant cells?

A. The external air pressure acting on the leaf surface

B. The chemical energy stored in sugars used for transport

C. The electric charge across the plasma membrane

D. The physical pressure exerted by the cell contents against the cell wall that contributes

26. Which feature best distinguishes eukaryotic cells from prokaryotic cells?

A. Lack of any organelles

B. Having a cell wall

C. Being always smaller in size

D. Presence of a membranebound nucleus

27. Which type of cell in a plant lacks chloroplasts and is specialised for transporting water?

A. Guard cell

B. Xylem vessel

C. Root hair cell

D. Mesophyll cell

28. Which component of red blood cells carries oxygen?

A. Platelets

B. Haemoglobin

C. White blood cells

D. Plasma

29. Which process describes the breakdown of large food molecules into smaller molecules by enzymes?

A. Photosynthesis

B. Assimilation

C. Digestion

D. Excretion

30. What is the primary gas taken in by leaves for photosynthesis during the day?

A. Oxygen

B. Methane

C. Carbon dioxide

D. Nitrogen

31. Which muscles, besides the diaphragm, help expand the chest during deep inhalation?

A. Facial muscles

B. Intercostal muscles between the ribs

C. Biceps in the arms

D. Gastrocnemius muscles of the calves

32. Which statement best describes an enzyme's active site?

A. The region where the substrate binds and the reaction occurs
B. A carbohydrate chain on the enzyme surface

C. A storage area for energy

D. A place where DNA is stored

33. What does a potometer measure and how is it related to transpiration?

A. Soil moisture content directly

B. Amount of sugar transported in the phloem

C. Rate of water uptake by a cut shoot, used as an estimate of transpiration rate
D. Root growth rate in different soils

34. Which of the following elements is essential for the formation of ATP and nucleic acids and is part of the chemicals of life?

A. Phosphorus

B. Gold

C. Mercury

D. Helium

35. 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 CO2 at night to reduce water loss in hot, dry climates
D. To absorb nutrients from the air

36. Which cells control the opening and closing of stomata?

A. Sclerenchyma cells

B. Companion cells

C. Guard cells

D. Epidermal hair cells

37. Which process occurs continuously in plant cells, both day and night?

A. Respiration only

B. Photosynthesis more than respiration

C. Neither respiration nor photosynthesis

D. Photosynthesis only

38. 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

39. Which tissue in aquatic plants helps transport gases to submerged parts?

A. Aerenchyma

B. Palisade mesophyll

C. Cuticle

D. Phloem only

40. What happens to oxygen produced in the chloroplast during photosynthesis?

A. It is transported in the phloem to roots

B. It is converted into carbon dioxide immediately

C. It is stored in the vacuole

D. It is released to the atmosphere through stomata or used in cellular respiration

41. Which hypothesis best explains the bulk flow of sugars in the phloem from source to sink?

A. Pressure-flow (mass flow) hypothesis where loading of sugars creates a pressure gradient
B. Diffusion down a concentration gradient only

C. Cohesion-tension pulling sugars upward like water in xylem
D. Active pumping of sugar by xylem vessels

42. Which of the following is an adaptation of alveoli for efficient gas exchange?

A. Packed with adipose tissue to insulate

B. Large surface area and very thin walls

C. Thick epithelial walls to protect lungs

D. Lined with keratin for strength

43. Which substance helps maintain pH in blood and other body fluids by acting as a buffer?

A. Oxygen

B. Sucrose

C. Bicarbonate (HCO_3^-)

D. Cellulose

44. What is the function of pleural fluid between the lung membranes?

A. To prevent oxygen entering the blood

B. To reduce friction and allow smooth movement of the lungs

C. To create friction while breathing

D. To absorb excess oxygen

45. What is cavitation in xylem and why is it harmful?

A. The formation of air bubbles in the water column that interrupt water transport
B. Excessive sugar accumulation in phloem causing blockages
C. The growth of new xylem vessels which is beneficial

D. The binding of minerals to the xylem walls improving conduction

46. What type of bond holds two amino acids together in a protein chain?

A. Peptide bond

B. Hydrogen bond

C. Disulfide bridge

D. Ionic bond

47. What is the main transport medium that carries oxygen, nutrients and wastes around the bodies of most animals?

A. Saliva

B. Lymph

C. Sweat

D. Blood

48. Which forces help water rise through narrow xylem vessels (capillary action)?

A. Active transport by xylem cells using ATP

B. Gravity pushing water up

C. Diffusion of water vapour only

D. Adhesion to vessel walls and cohesion between water molecules

49. Which mineral is especially important for strong bones and eggshell formation in poultry?

A. Calcium

B. Iron

C. Sodium

D. Potassium

50. What distinguishes rough endoplasmic reticulum (RER) from smooth endoplasmic reticulum (SER)?

A. RER produces ATP while SER digests food

B. RER has ribosomes on its surface and is involved in protein synthesis; SER lacks
C. RER is only found in plant cells while SER is only in animal cells
D. RER stores water; SER transports water