Myfuture CBC Revision

general science - Grade 10

Question Paper

1. Why can some plants repair embolisms (air blockages) in xylem after a period of drought?

A. Phloem converts into xylem within hours

B. Embolisms are permanent and cannot be repaired

C. They grow new leaves to replace blocked xylem instantly

D. Root pressure or refilling mechanisms can dissolve or bypass air bubbles and restore flow

2. Which environmental condition generally increases the rate of transpiration?

A. Low light and high soil moisture

B. High humidity and still air

C. High temperature and windy conditions

D. Cool nights with fog

3. What is the pH of a neutral solution at standard conditions?

A. 1

B. 14

C. 7

D. 0

4. Which component of blood carries most of the oxygen around the body?

A. White blood cells

B. Plasma

C. Platelets

D. Haemoglobin in red blood cells

5. Which practice contributes to antibiotic resistance in communities?

A. Washing hands regularly with soap

B. Boiling water before drinking

C. Vaccinating children according to schedule

D. Using antibiotics unnecessarily or not finishing prescribed courses

6. Which of these increases the strength of an electromagnet made from a coil around a soft iron core?

A. Using a non-magnetic core such as plastic

B. Removing the iron core

C. Decreasing the number of turns in the coil

D. Increasing the current through the coil

7. Which method of asexual reproduction is correctly matched with an organism that uses it?

A. Vegetative propagation — Bacteria

B. Spore formation — Human skin cells

C. Binary fission — Earthworm

D. Budding — Yeast

8. Which of the following best describes why tools like wheelbarrows and pulleys are useful in everyday life in Kenya?

A. They remove friction from all machines

B. They convert mass into energy

C. They decrease the weight of objects

D. They increase the turning effect or mechanical advantage so heavy loads can be

9. What happens to the pH of a solution if small amounts of acid are added to pure water?

A. pH decreases below 7

B. Solution becomes basic

C. pH increases above 7

D. pH remains exactly 7

10. How are mineral ions mainly taken up by root cells from the soil?

A. By photosynthesis in the roots

B. By simple diffusion of large molecules

C. By active transport using energy (ATP)

D. By bulk flow through phloem

11. Which gas do human lungs take in for use by body cells during respiration?

A. Nitrogen

B. Carbon dioxide

C. Oxygen

D. Water vapour

12. Which cell structure mainly controls entry and exit of substances into and out of the cell?

A. Cytoplasm

B. Nucleus

C. Cell wall

D. Cell membrane

13. Compared with anaerobic respiration, aerobic respiration in cells produces:

A. Less energy

B. More energy

C. Exactly the same energy

D. No energy

14. Which indicator would you choose to detect a weak acid neutralised by a strong base in a titration?

A. Phenolphthalein (turns pink in base)

B. No indicator needed

C. Methyl orange (suitable for strong acid-strong base)

D. Blue litmus only

15. Why does stirring a mixture of reactants usually increase the rate of reaction in a solution?

A. Stirring removes catalysts from the solution

B. Stirring distributes reactants so collisions occur more frequently

C. Stirring decreases the temperature and slows collisions

D. Stirring increases the surface area of molecules

16. What is the function of the thin layer of pleural fluid between the lungs and chest wall?

A. To produce mucus for the lungs

B. To cause lung infection

C. To reduce friction during breathing

D. To help digest food

17. Which cell structure stores the cell's hereditary information (DNA) in most eukaryotic cells?

A. Vacuole

B. Ribosome

C. Nucleus

D. Mitochondrion

18. What is formed when ammonia (a weak base) reacts with hydrochloric acid?

A. Calcium chloride

B. Ammonium chloride (a salt)

C. Water only

D. Sodium chloride

19. What is a couple in turning effect terms?

A. Any two forces acting at the same point

B. A pair of equal and opposite parallel forces whose moments produce pure rotation

C. A single force acting along the line of the pivot

D. Two forces that cancel exactly producing no rotation

20. What is the turning effect of a force about a pivot commonly called?

A. Moment (torque)

B. Friction

C. Mass

D. Pressure

21. If a force produces a clockwise moment of 15 N·m and another force produces an anticlockwise moment of 9 N·m about the same pivot, what is the net moment and the rotation tendency?

A. 6 N·m anticlockwise

B. 6 N·m clockwise

C. 24 N·m clockwise

D. 0 N·m — balanced

22. Why do guard cells open stomata in light?

A. They lose water and collapse opening the stoma

B. They expand because xylem pressure increases

C. They secrete wax to open the pore

D. They take up potassium ions, become turgid and bend to open the pore

23. How do magnetic field lines outside a bar magnet run?

A. In closed loops only inside the magnet and not outside

B. From the south pole to the north pole through the air

C. Randomly with no particular direction

D. From the north pole to the south pole through the air

24. Which structure is hair-like and used for movement and feeding in Paramecium?

A. Flagellum

B. Pseudopodia

C. Cell wall

D. Cilia

25. A force of 30 N acts at 0.20 m from a pivot at an angle of 60° to the lever. What is the moment about the pivot? (Use sin 60° = 0.866)

A. 6.0 N·m

B. 5.2 N·m

C. 0.260 N·m

D. 30 N·m

26. According to collision theory, why does increasing the temperature usually make reactions go faster?

A. Reactants change into different substances before colliding

B. The total number of particles decreases

C. Particles become heavier and collide less often

D. More particles have energy greater than the activation energy

27. What is the main reason transformer cores are made of laminated sheets instead of a single solid piece?

A. To increase the magnetic flux by creating air gaps

B. To reduce eddy current losses and heating

C. To make the core heavier and stable

D. To allow oil to flow between laminations

28. Which salt can be formed when dilute sulphuric acid reacts with sodium hydroxide?

A. Sodium sulphate

B. Sodium chloride

C. Calcium sulphate

D. Sodium carbonate

29. Which sequence shows the correct order from smallest to largest level of biological organization?

A. Organ Cell Tissue Organ system

B. Tissue Cell Organ Organ system

C. Organ system Organ Tissue Cell

D. Cell Tissue Organ Organ system

30. During vigorous exercise when oxygen is limited, human muscle cells carry out anaerobic respiration producing:

A. Ethanol

B. Lactic acid

C. Glucose

D. Oxygen

31. How do root hairs assist in water absorption?

A. They close stomata

B. They produce xylem vessels

C. They perform photosynthesis

D. They increase surface area for absorption

32. Which of the following correctly describes the simplified word equation for aerobic respiration?

A. Carbon dioxide + water glucose + oxygen + energy

B. Glucose + water oxygen + carbon dioxide + energy

C. Glucose + oxygen carbon dioxide + water + energy

D. Oxygen + energy glucose + carbon dioxide + water

33. Which compound is a salt formed when ethanoic acid (vinegar) reacts with sodium hydroxide?

A. Calcium carbonate

B. Sodium chloride

C. Sodium ethanoate (sodium acetate)

D. Sodium hydroxide

34. In a classroom microscope practical, which stain is commonly used to see bacteria more clearly by increasing contrast?

A. Crystal violet or simple staining

B. Carmine for animal tissues only

C. No stain, because bacteria are always colored

D. Iodine for plant cell walls only

35. Guttation differs from transpiration because guttation is caused by:

A. Root pressure forcing water out of leaf margins at night

B. Evaporation from mesophyll surfaces during daytime

C. Active secretion of water by stomata

D. Wind removing boundary layer moisture

36. Which rule helps predict the direction of force on a current-carrying wire in a magnetic field (motor effect)?

A. Lenz's law

B. Fleming's left-hand rule

C. Ohm's law

D. Fleming's right-hand rule

37. A student observes small, moving single-celled organisms in pond water under a microscope. These are most likely:

A. Protozoa

B. Fungi

C. Large insects

D. Viruses

38. Which two structures are present in plant cells but generally absent in animal cells?

A. Chloroplast and cell wall

B. Golgi apparatus and lysosome

C. Mitochondrion and ribosome

D. Nucleus and cell membrane

39. Why does breathing rate increase during physical exercise?

A. Because cells need more oxygen and produce more carbon dioxide

B. Because body temperature falls

C. Because lungs become smaller

D. Because bones need more oxygen

40. Which statement correctly distinguishes viruses from bacteria?

A. Viruses are visible with a light microscope but bacteria are not
B. Viruses can reproduce on their own outside a host cell, bacteria cannot
C. Bacteria are much larger than viruses and can live independently, viruses need host cells
D. Bacteria always cause disease while viruses never do

41. Tuberculosis (TB), a common respiratory disease in Kenya, is caused by which type of organism?

A. A virus

B. A fungus

C. A protozoan

D. A bacterium

42. When yeast performs anaerobic respiration (fermentation), what are the main products?

A. Lactic acid and oxygen

B. Glucose and ATP

C. Oxygen and water

D. Ethanol and carbon dioxide

43. Where does most gas exchange between air and blood occur in the human respiratory system?

A. Diaphragm

B. Trachea

C. Alveoli

D. Bronchioles

44. Which process allows oxygen to move from air into leaf cells without the use of energy?

A. Diffusion

B. Endocytosis

C. Active transport

D. Osmosis

45. Which microorganism is responsible for athlete's foot and ringworm?

A. Fungi (dermatophytes)

B. Viruses

C. Bacteria

D. Protozoa

46. Two equal forces of 10 N act as a couple separated by 0.20 m. What is the moment of the couple?

A. 2.0 N·m

B. 0.5 N·m

C. 200 N·m

D. 10 N·m

47. For a uniform rod of length L pivoted at one end, where does the weight act when calculating the turning effect?

A. At the free end (L from the pivot)

B. Midway between the pivot and the centre

C. At the pivot

D. At the centre of the rod (L/2 from the end)

48. Which example shows a behavioral adaptation in animals?

A. Green leaves that perform photosynthesis

B. Birds migrating to warmer regions in winter

C. A camel’s hump storing fat

D. Thorns on a rose bush

49. Which gas is taken in and used by plants during photosynthesis?

A. Methane

B. Nitrogen

C. Carbon dioxide

D. Oxygen

50. Which statement about multicellular organisms is correct?

A. All cells in the organism have exactly the same shape and function

B. Multicellular organisms are always microscopic

C. Cells in multicellular organisms do not divide

D. Cells become specialized to perform specific functions