ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

COMBINED SCIENCE **4003/1**

PAPER 1 Multiple Choice 1 hour

JUNE 2024 SESSION

Additional materials:
Multiple Choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)
Calculator (Optional)

INSTRUCTIONS TO CANDIDATES

Answer **all** questions. For each question, there are **four** possible answers, **A, B, C** and **D**. Choose the correct answer. Record your choice in **soft pencil** on the separate answer sheet provided.

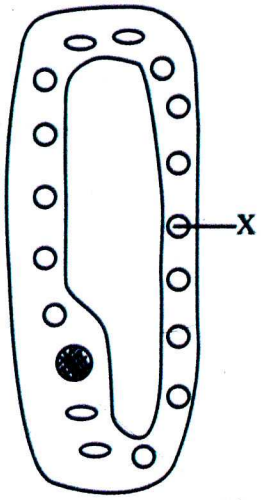
Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

There are **forty** questions in this paper. Each correct answer will score **one** mark. Any rough working should be done on this question paper.

This question paper consists of 16 printed pages.

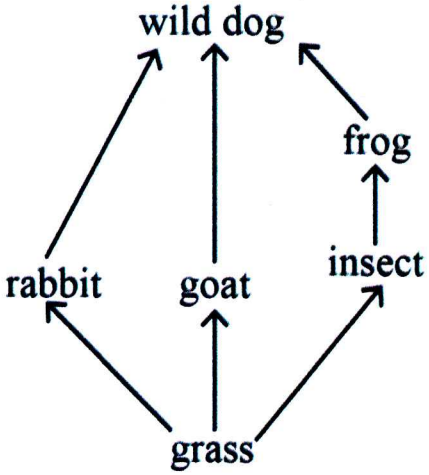
1 The diagram shows a palisade cell.



The function of part **X** is to

A trap sunlight.
B maintain the shape of the cell.
C control the activities of the cell.
D allow substances in and out of the cell.

2 The diagram shows a food web.



Which organism is a secondary consumer?

A grass
B goat
C frog
D rabbit

3 Which human characteristic shows discontinuous variation?

A sex
B mass
C height
D foot length

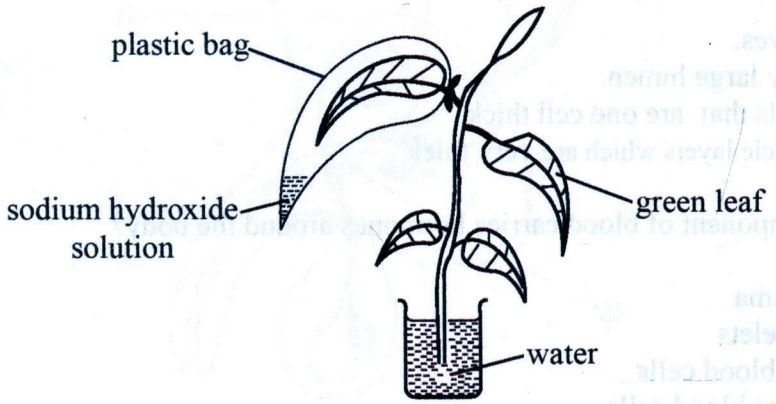
4 During digestion, the enzyme amylase converts

A protein to amino acids.
B starch to glycogen.
C starch to maltose.
D fats to fatty acids and glycerol.

5 Kwashiorkor is a deficiency disease caused by lack of

A fats.
B proteins.
C vitamins.
D carbohydrates.

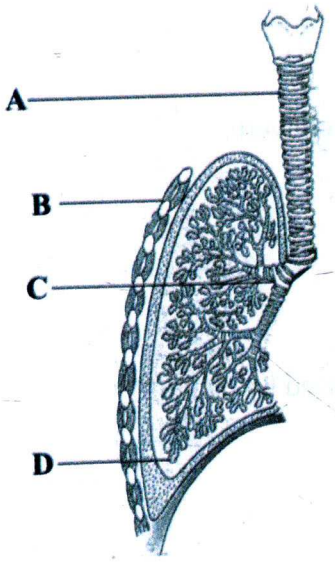
6 An experiment was set up to investigate a factor of photosynthesis as shown in the diagram.



What is the function of the sodium hydroxide in the experiment?

A to release oxygen
B to absorb oxygen
C to absorb carbon dioxide
D to release carbon dioxide

7 The diagram shows part of the human respiratory system.
In which part, **A**, **B**, **C** or **D**, does gaseous exchange take place?



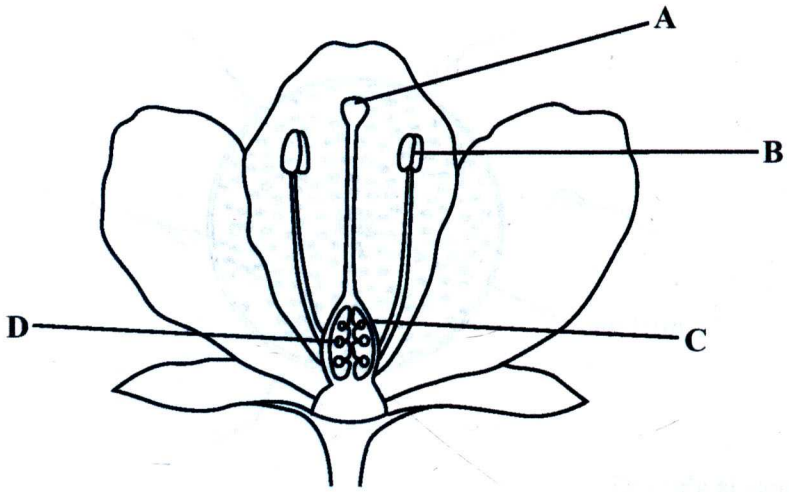
8 Blood capillaries have

A valves.
B very large lumen.
C walls that are one cell thick.
D muscle layers which are very thick.

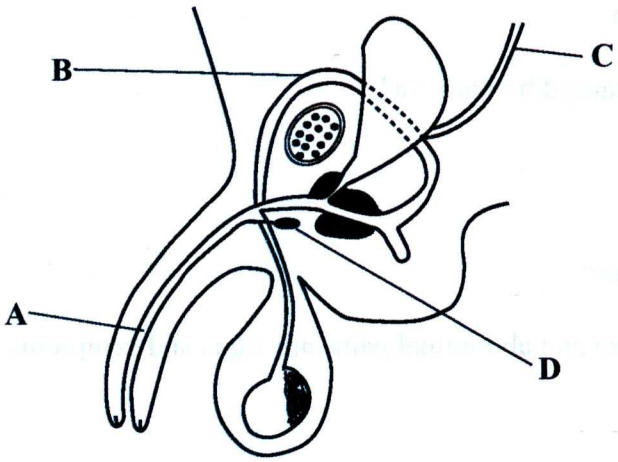
9 Which component of blood carries hormones around the body?

A plasma
B platelets
C red blood cells
D white blood cells

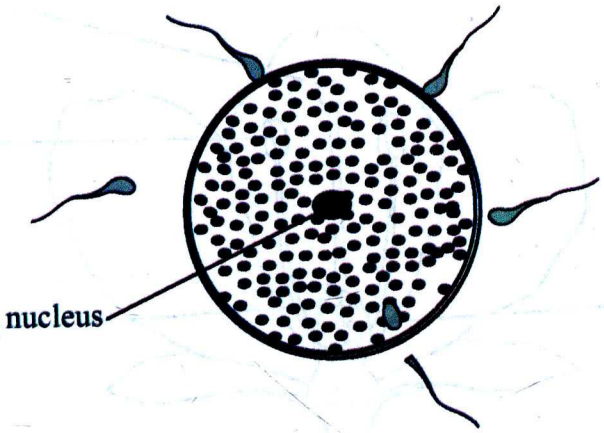
10 The diagram shows the general structure of a flower.
Which part, **A**, **B**, **C** or **D**, develops into a fruit after fertilisation?



11 The diagram shows the male reproductive system.
Which part, **A**, **B**, **C** or **D**, is cut or tied during sterilisation?



12 The diagram shows a process in human reproduction.



Which process is shown?

A ovulation
B menstruation
C implantation
D fertilisation

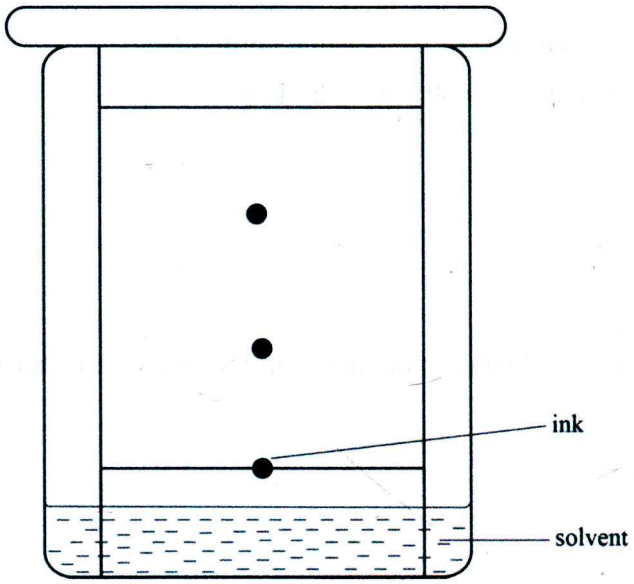
13 Which disease is caused by bacteria?

A malaria
B bilharzia
C syphilis
D genital herpes

14 Vomiting, diarrhoea and abdominal pains are signs and symptoms of

A scurvy.
B cholera.
C aenamia.
D gonorrhoea.

15 The diagram shows a method of separating dyes.



The method of separation shown in the diagram is

A filtration.
B distillation.
C evaporation.
D chromatography.

16 Which substance is a mixture?

A air
B oxygen
C magnesium
D magnesium oxide

17 One mole of hydrogen and one mole of sodium chloride have the same number of

A neutrons.
B electrons.
C protons.
D particles.

18 An organic compound contains 84% carbon (C) and 16% hydrogen (H) by mass.

What is the empirical formula of the organic compound?
[Atomic mass of carbon is 12 and that of hydrogen is 1]

A CH
B CH_2
C $C_{12}H$
D C_7H_{16}

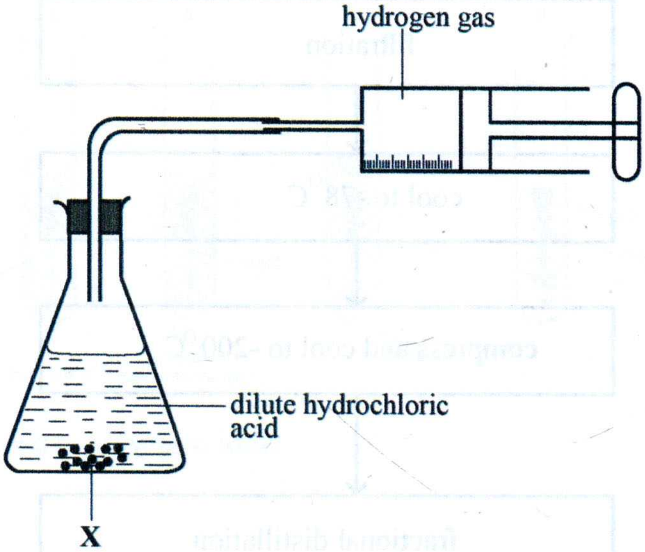
19 Which process is used to manufacture ammonium nitrate fertiliser from ammonia?

A reduction
B distillation
C electrolysis
D neutralisation

20 Lemon juice is considered to be a weak acid.
Which observations, with litmus paper, shows that lemon juice is an acid?

	blue litmus	**red litmus**
A	remains blue	remains red
B	turns red	remains red
C	remains blue	turns blue
D	bleaches	bleaches

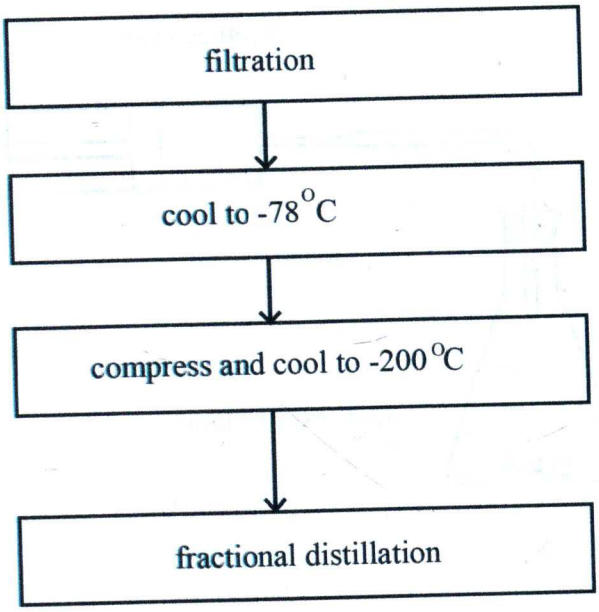
21 The diagram shows a reaction of dilute hydrochloric acid with substance **X** to produce a magnesium salt.



Substance **X** is

A magnesium.
B magnesium oxide.
C magnesium chloride.
D magnesium hydroxide.

22 The flow diagram shows the stages involved in the separation of the gases in air.



Which gas is collected as a liquid at a temperature of -183 °C by the fractional distillation process?

A hydrogen
B nitrogen
C oxygen
D carbon dioxide

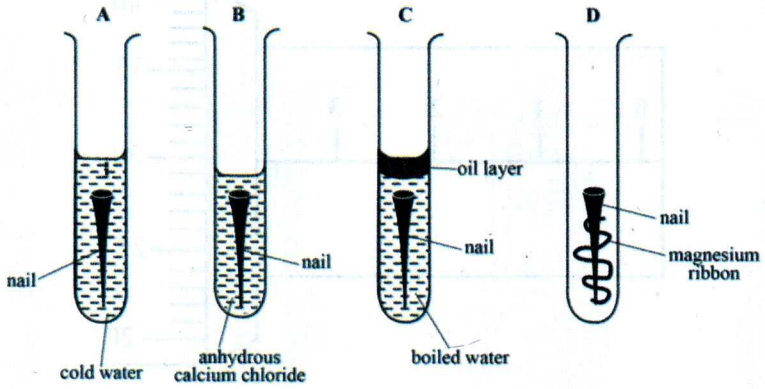
23 The equation shows the production of sulphur trioxide.

$2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)} \qquad \Delta H = -98$ KJ/mol

The equation shows that the production of sulphur trioxide is

A an endothermic process.
B a displacement process.
C a reduction process.
D an exothermic process.

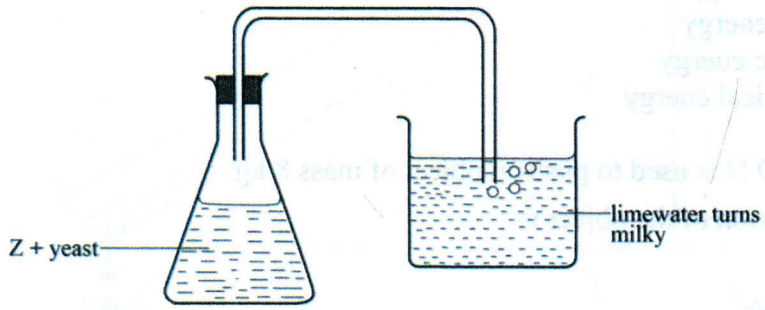
24 The diagram shows an experimental set up to investigate conditions necessary for rusting.
Which test tube, **A**, **B**, **C** or **D**, will have a rusty nail?



25 Which metal is used to galvanise iron?

A tin
B zinc
C copper
D chromium

26 The diagram shows the preparation of ethanol.



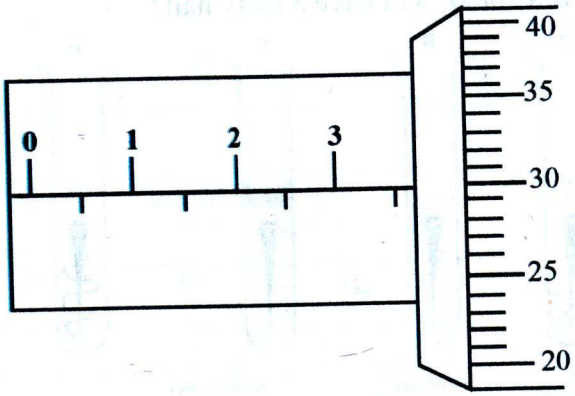
Substance **Z** is

A water.
B glucose solution.
C dilute sulphuric acid.
D calcium carbonate solution.

27 To which homologous series do methane, ethane and propane belong?

A alkanes
B alkenes
C alcohols
D carboxylic acids

28 The diagram shows a scale on a micrometer screw gauge.



The measurement shown is

A 3.30 mm.
B 3.50 mm.
C 3.80 mm.
D 30.0 mm.

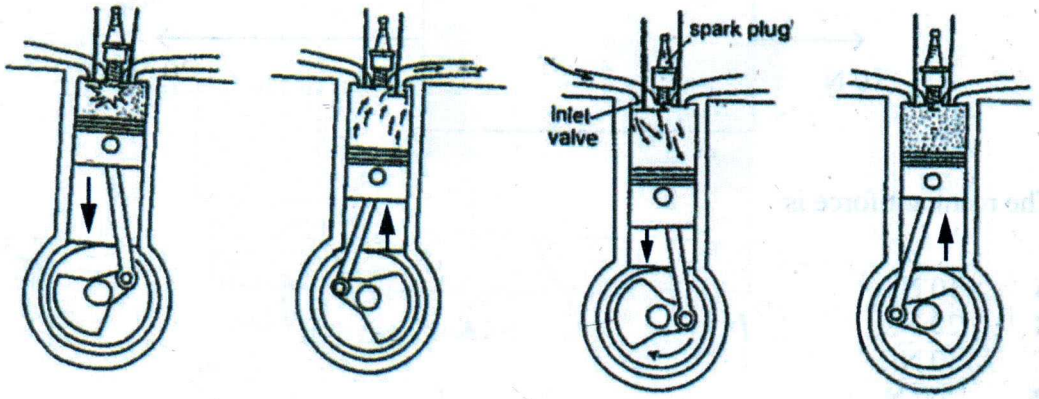
29 Which one is a form of potential energy?

A heat energy
B light energy
C elastic energy
D electrical energy

30 A force of 20 N is used to push an object of mass 8 kg.
The acceleration of the object is

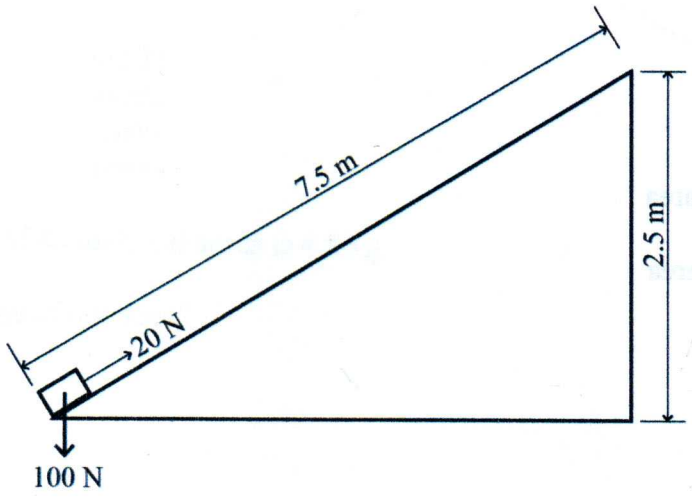
A 0.4 m/s^2.
B 2.5 m/s^2.
C 12.0 m/s^2.
D 160.0 m/s^2.

31 The diagrams show the four strokes of a petrol engine but not in sequential order.
In which diagram, **A**, **B**, **C** or **D**, is chemical energy converted to kinetic energy?



A **B** **C** **D**

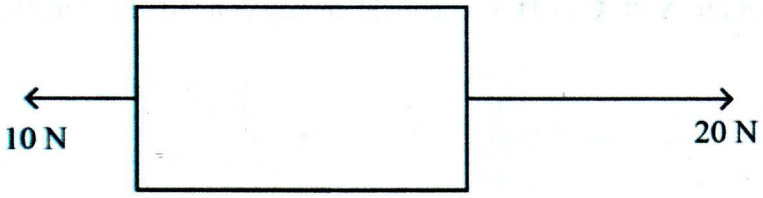
32 The diagram shows a simple machine.



What is the velocity ratio of the machine?

A 0.33
B 3.00
C 5.00
D 10.00

33 The diagram shows forces acting on an object.



The resultant force is

A 10 N.
B 20 N.
C 30 N.
D 200 N.

34 Which one is the correct formula for calculating pressure?

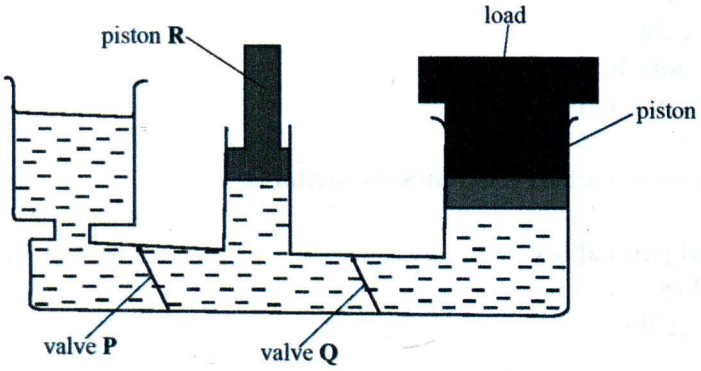
A $\frac{\text{area}}{\text{force}}$

B $\frac{\text{force}}{\text{area}}$

C force × area

D force + area

35 In a hydraulic system, there are two valves, P and Q, as shown in the diagram.



What happens to the valves when piston **R** moves down?

	valve P	valve Q
A	opens	closes
B	closes	closes
C	opens	opens
D	closes	opens

36 The total mass of 40 identical seeds is 4.80 g.

What is the mass of one seed?

A 0.12 g
B 19.20 g
C 40.48 g
D 83.33 g

37 Which physical quantity should remain constant when applying Ohm's law?

A pressure
B voltage
C current
D temperature

38 A direct current (d.c) motor converts

A kinetic energy to electrical energy.
B heat energy to electrical energy.
C electrical energy to kinetic energy.
D heat energy to kinetic energy.

39 Light waves are transmitted inside

A optic fibres.
B coaxial cables.
C twisted wire lines.
D sheathed pair cables.

40. An example of an unguided transmission media is

A sheathed pair cables.
B optic fibre.
C coaxial cable.
D Wi-Fi.