

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology
Paper 1 Multiple Choice

5090/1

Wednesday

26 OCTOBER 2016

Additional Information:

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

Time 50 minutes

Instructions to Candidates

Do not open this Question Paper until you are told to do so.

Write your name, centre number and candidate number on the Answer Sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer all questions. For each question there are four possible answers: **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Read very carefully the instructions on the Answer Sheet.

Information for Candidates

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

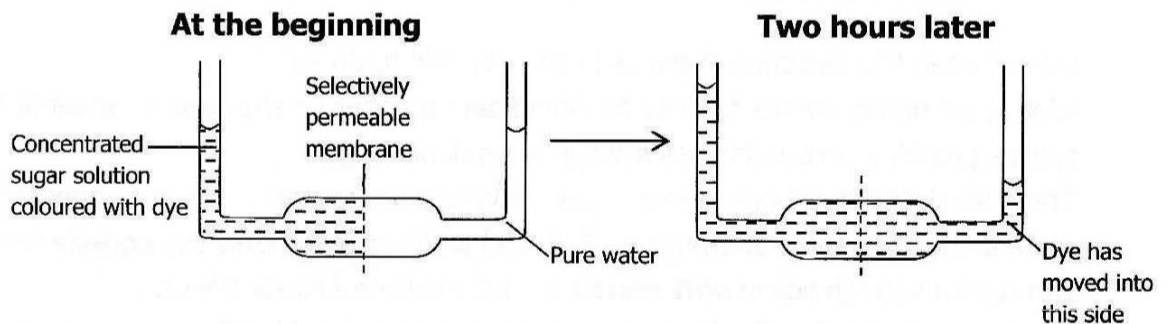
Any rough working should be done in this Question Paper.

Cell phones are not allowed in the examination room.

- 1 Which of the following is **not** a characteristic of all living organisms?
- A Egestion
 - B Excretion
 - C Growth
 - D Sensitivity
- 2 Some stages in the preparation of the epidermis of an onion for observation under a microscope are listed below.
- 1 Focus the microscope.
 - 2 Place the epidermis on a glass slide.
 - 3 Peel the epidermis from an onion.
 - 4 Cover the epidermis with a cover slip.
 - 5 Add iodine solution to the epidermis.

In which order do these stages occur to bring the image into focus?

- A 1 → 2 → 3 → 4 → 5
 - B 1 → 3 → 2 → 4 → 5
 - C 3 → 2 → 5 → 4 → 1
 - D 3 → 5 → 2 → 4 → 1
- 3 The diagram shows an experiment to demonstrate biological processes.



What processes are responsible for the movement of water and the dye?

- | | Movement of water | Movement of dye |
|---|--------------------------|------------------------|
| A | diffusion | osmosis |
| B | osmosis | diffusion |
| C | osmosis | translocation |
| D | translocation | diffusion |

- 4 A food sample solution was mixed with 2cm³ of Benedict's solution and gently heated for 3 minutes. What is the possible observation and conclusion from this experiment?

	Possible Observation	Conclusion
A	Colour turns from blue to orange	Proteins are present
B	Colour turns from blue to orange	Reducing sugar present
C	Colour turns blue	Proteins are present
D	Colour turns blue	Reducing sugar present

- 5 Which component of a balanced diet is used to make new enzyme molecules?

- A Carbohydrates
- B Fats
- C Proteins
- D Water

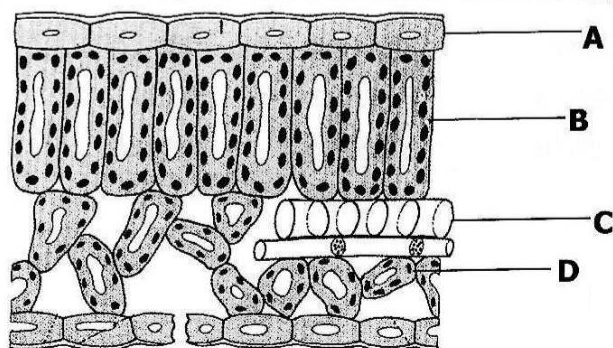
- 6 Which of these correctly identifies the nutritional related disorders and their causes?

	Kwashiokor	Rickets	Anaemia
A	Lack of carbohydrates	Lack of iron	Lack of calcium
B	Lack of carbohydrates	Lack of protein	Lack of iron
C	Lack of protein	Lack of vitamin C	Lack of calcium
D	Lack of protein	Lack of calcium	Lack of iron

- 7 What substances contain magnesium and nitrogen in plants?

	Magnesium	Nitrogen
A	Amino acids	Protein
B	Amino acids	Starch
C	Chlorophyll	Protein
D	Chlorophyll	Starch

- 8 The diagram shows a section through a leaf, seen under a microscope.



In which part is the carbon dioxide concentration lowest on a sunny day?

9 Which of the following is **not** an importance of saprophytic nutrition?

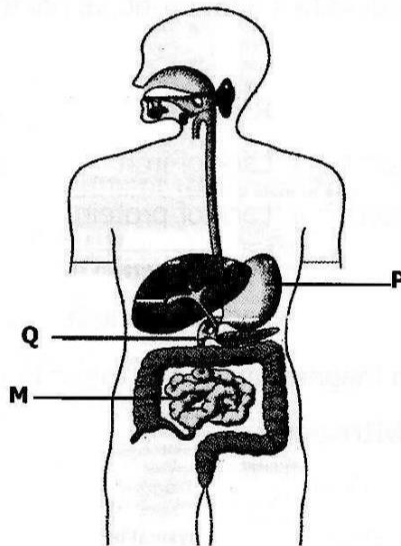
- A Decomposition of dead organic matter.
- B Manufacturing of food nutrients.
- C Production of antibiotics.
- D Recycling of nutrients.

10 The following is a dental formula of a dog.

$$i:\frac{3}{3}, c:\frac{1}{1}, pm:\frac{4}{4}, m:\frac{2}{3}$$

How many teeth are there in the lower jaw of the dog?

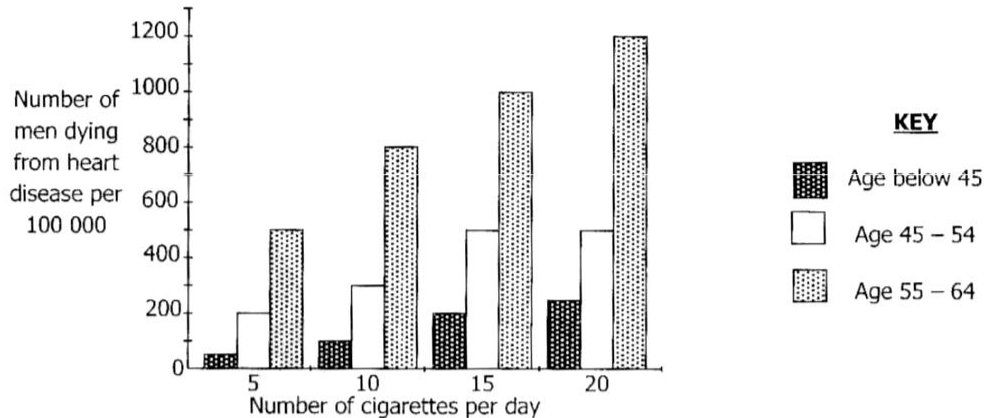
- A 11
 - B 10
 - C 21
 - D 22
- 11 The diagram below shows the human alimentary canal.



Which nutrients are digested in regions **P**, **Q** and **M**?

	P	Q	M
A	Starch	Fats	Proteins
B	Starch	Proteins	Fats
C	Protein	Peptides	Starch
D	Protein	Starch	Maltose

- 12** The chart shows the risk of heart disease developing in men who smoke cigarettes.



Which group of men is most at risk?

- A** Men aged below 45 who smoke 20 cigarettes per day.
B Men aged between 45 and 54 who smoke 10 cigarettes per day.
C Men aged between 45 and 54 who smoke 15 cigarettes per day.
D Men aged between 55 and 64 who smoke 20 cigarettes per day.
- 13** Which of the following best describes how HIV is transmitted?
A Being bewitched.
B Having handshakes with infected people.
C Having sexual intercourse with infected people.
D Sharing eating utensils with infected people.
- 14** What type of immunity do the antibodies in mothers' breast milk provide to the baby?
A Artificial active immunity.
B Artificial passive immunity.
C Natural active immunity.
D Natural passive immunity.

- 15** In an experiment to investigate transpiration, four identical leafy shoots were treated as follows:

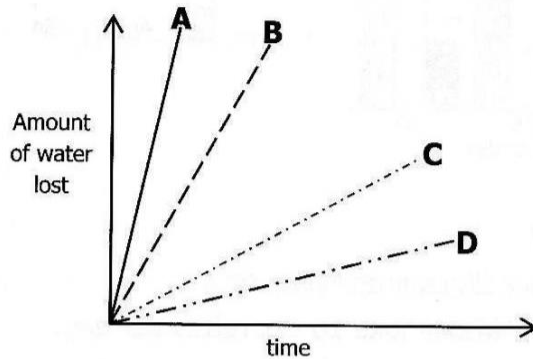
Shoot 1 Upper leaf surfaces covered with Vaseline/water proof jelly.

Shoot 2 Lower leaf surfaces covered with Vaseline/water proof jelly.

Shoot 3 Upper and lower leaf surfaces covered with Vaseline/water proof jelly.

Shoot 4 Untreated.

The graph shows the water loss by the four shoots.



Which line shows the result for **shoot 1**?

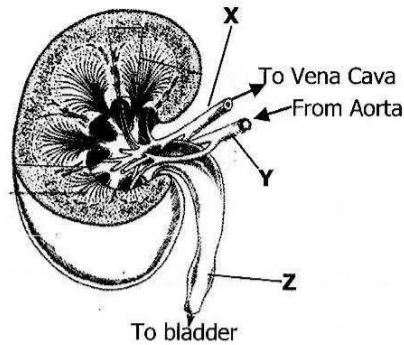
- 16** Some of the components of the blood of a mammal are listed below:

- 1 Antibodies
- 2 Fibrinogen
- 3 Platelets
- 4 White blood cells

Which **two** of these components are involved in blood clotting?

- A** 1 and 2
B 1 and 4
C 2 and 3
D 3 and 4
- 17** Why is it important to determine the rhesus factor of a pregnant woman?
- A** For organ transplant.
B For purposes of blood transfusion.
C To prevent haemolytic disease in the foetus.
D To prevent HIV transmission.

- 18 The diagram shows a kidney and three tubes associated with it.



In which tube(s) will the most urea be found?

- A Z only
 - B X and Z
 - C X and Y
 - D X, Y and Z
- 19 The diagrams below show skin temperature in a human body when it is exposed to cold air and then exposed to warm air.



Body in cold air



Body in warm air



KEY

-  37°C
-  35°C

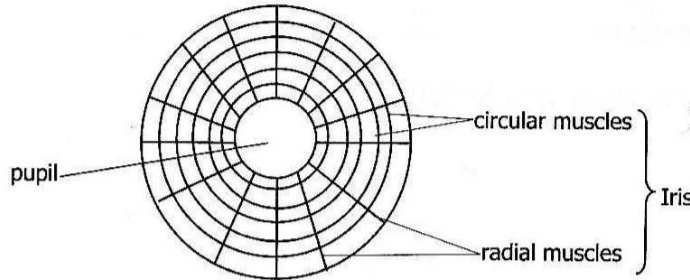
What causes the observed change in the skin temperature on exposure to warm air?

- A Less blood flowing just below the skin.
 - B Less blood going to the heart and lungs.
 - C More blood flowing just below the skin.
 - D More blood going to the heart and lungs.
- 20 Which of the following results from increased secretion of adrenaline?
- A Decreased breathing rate.
 - B Decreased sweating.
 - C Increased blood supply to the intestine.
 - D Increased supply of glucose in the blood.

21 A person accidentally steps on a thorn. In which order does the electrical impulse flow?

- A Motor neurone → sensory neurone → relay neurone.
- B Motor neurone → relay neurone → sensory neurone.
- C Sensory neurone → motor neurone → relay neurone.
- D Sensory neurone → relay neurone → motor neurone.

22 The diagram shows the muscles which control the size of the pupil in an eye.



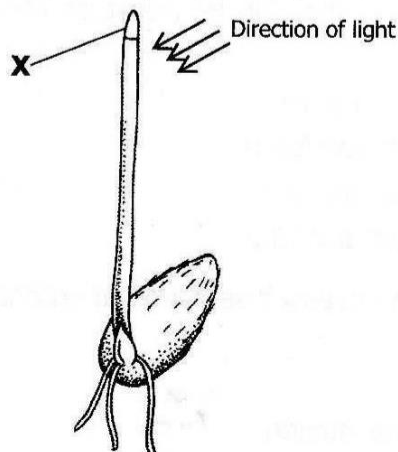
How do these muscles make the pupil larger?

	Circular muscles	Radial muscles
A	Contract	Contract
B	Contract	Relax
C	Relax	Contract
D	Relax	Relax

23 The exoskeleton of insects is made up of ...

- A calcium phosphate.
- B chitin.
- C collagen.
- D keratin.

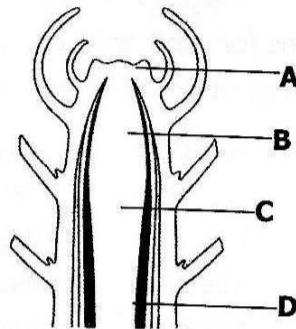
24 The diagram shows a germinating cereal grain.



What will happen at **X**, if light shines on the shoot tip from the direction shown?

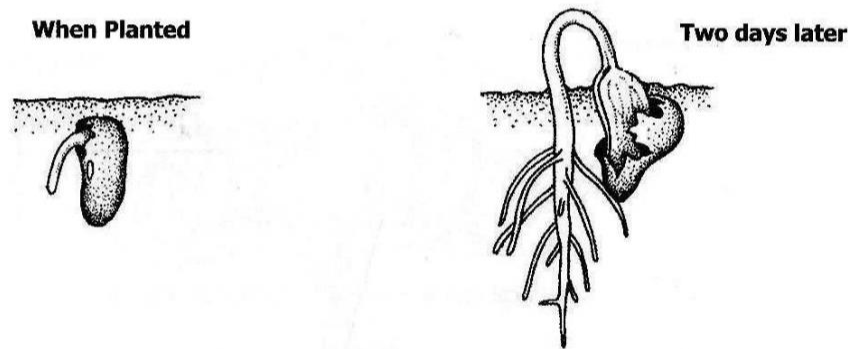
	Rate of growth	Amount of auxin
A	Increases	High
B	Increases	Low
C	Reduces	High
D	Reduces	Low

25 The diagram below shows the longitudinal section through a shoot apex.



Which labelled parts show the region of cell elongation?

26 The diagram shows a bean seed when planted and the same seed two days later.



Which conditions are necessary for these changes to occur?

	Suitable temperature	Presence of water	Presence of carbon dioxide	Presence of oxygen
A	✓	✓	✓	x
B	✓	✓	x	✓
C	✓	x	✓	✓
D	x	✓	✓	✓

27 What term is used to describe the process in which a new individual gradually grows from the parent and eventually separates?

- A** Budding.
- B** External fertilisation.
- C** Spore formation.
- D** Vegetative reproduction.

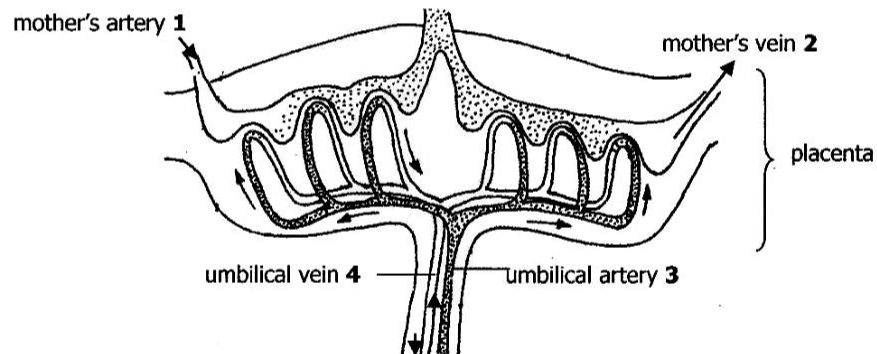
28 Which of these correctly identifies a natural and an artificial method of propagation?

	Natural	Artificial
A	Corms	Grafting
B	Corms	Suckers
C	Runners	Suckers
D	Runners	Corms

29 Flowers show adaptations for wind or insect pollination. Which of these adaptations are found in wind pollinated flowers?

	Anther	Nectary	Stigma
A	Firmly attached	Present	Inside flower
B	Firmly attached	Present	Outside flower
C	Loosely attached	Absent	Inside flower
D	Loosely attached	Absent	Outside flower

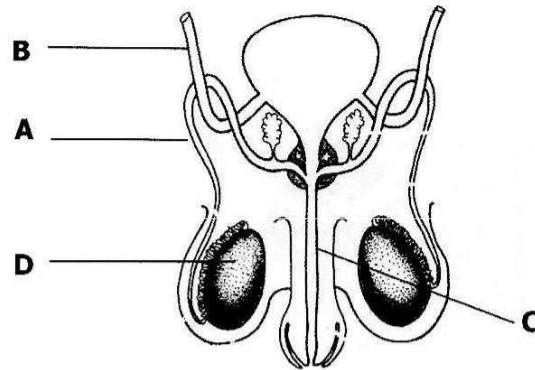
30 The diagram shows part of the placenta.



In which numbered parts does the blood contain the highest amount of oxygen and nutrients?

- A 1 and 2
- B 1 and 3
- C 1 and 4
- D 2 and 3

31 The diagram shows some parts of the male reproductive system.



Which part is cut during a vasectomy?

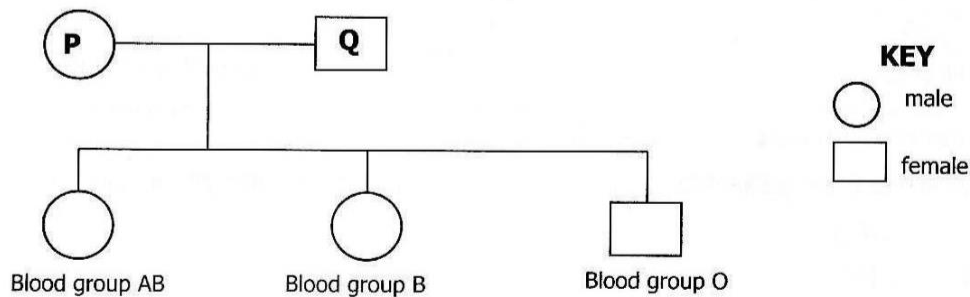
32 Which of the following is **not** the cause of infertility in human beings?

- A Alcoholism
- B Blocked oviducts
- C Use of antibiotics
- D Weak sperms

33 Which of the following are correct examples of continuous and discontinuous variation?

	Continuous	Discontinuous
A	Height	Eye colour
B	Blood group	Skin colour
C	Sex	Body mass
D	Eye colour	Tongue rolling

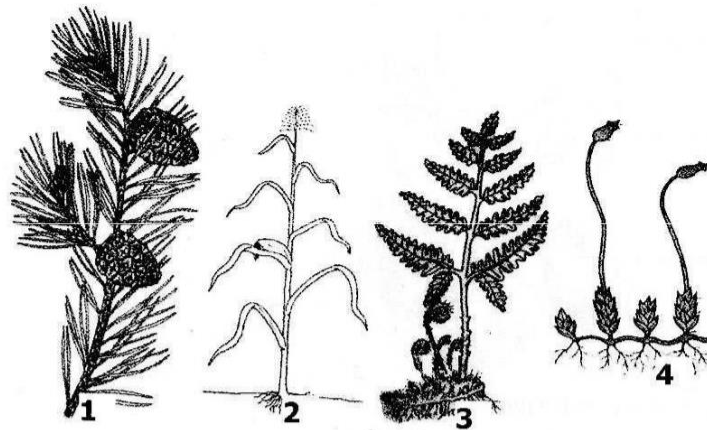
34 The diagram shows the blood groups of some members of a family.



What are the blood group genotypes of the parents **P** and **Q**?

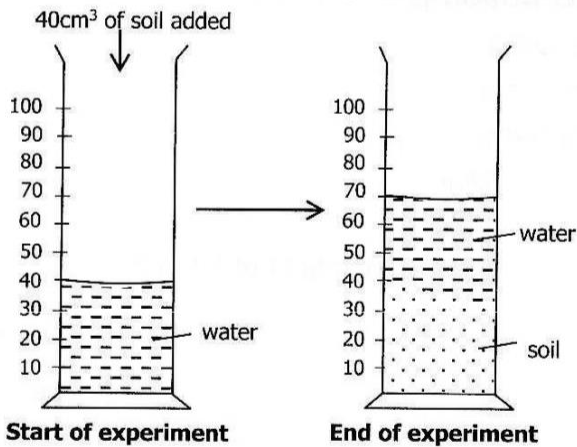
	P	Q
A	$I^A I^O$	$I^B I^O$
B	$I^A I^B$	$I^B I^B$
C	$I^A I^A$	$I^B I^O$
D	$I^O I^O$	$I^B I^O$

35 What type of plants are shown in the diagrams below?



	Ferns	Moss	Angiosperm	Coniferous
A	1	2	3	4
B	1	2	4	3
C	3	4	2	1
D	4	3	1	2

36 The diagram shows an experiment to find the proportion of air in a soil sample.



What was the percentage air content, by volume, of the soil sample?

- A 10%
- B 20%
- C 25%
- D 70%

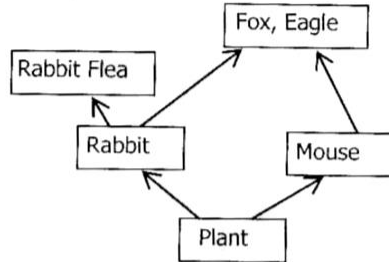
37 The following organisms are found in an ecosystem.

- 1 Grass
- 2 Snake
- 3 Grasshopper
- 4 Bird

Which of the following food chains correctly represents the feeding relationship in this ecosystem?

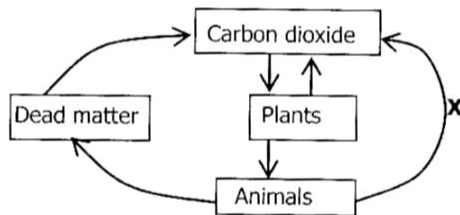
- A 1 → 2 → 3 → 4
- B 1 → 3 → 4 → 2
- C 2 → 3 → 4 → 1
- D 2 → 4 → 3 → 1

38 The diagram below shows a simple food web.



Which one of the following organisms in the food web is a primary consumer?

- A Fox
 - B Plant
 - C Rabbit
 - D Rabbit flea
- 39 The diagram below shows part of the carbon cycle.



What process is represented by the arrow X?

- A Decay
 - B Nutrition
 - C Photosynthesis
 - D Respiration
- 40 Which two poisonous substances are found in motor exhaust fumes?
- A Asbestos and lead.
 - B Lead and nitrogen oxides.
 - C Nitrogen oxides and Sulphur dioxide.
 - D Asbestos and carbon dioxide.