

**NAMIBIA SENIOR SECONDARY CERTIFICATE**

**BIOLOGY ORDINARY LEVEL**

**4322/1**

PAPER 1 Multiple Choice

1 hour

Marks 40

**2021**

Additional Materials: Multiple choice answer sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

**INSTRUCTIONS AND INFORMATION TO CANDIDATES**

- Write in soft pencil.
- Answer **all** questions.
- Make sure that you receive the multiple choice answer sheet with your **Candidate Number** on it.
- There are **forty** questions on this paper.
- 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.
- If you want to change an answer, thoroughly erase the one you wish to delete.

**Read the instructions on the answer sheet carefully.**

- Each correct answer will score one mark.
- All questions in this paper carry equal marks.
- Any rough working should be done in this booklet.
- You may use a non-programmable calculator.

This document consists of **14** printed pages and **2** blank pages.



**Republic of Namibia**

**MINISTRY OF EDUCATION, ARTS AND CULTURE**

- 1 Every organism can be described by a scientific name which consists of two parts.

What is this way of naming called?

- A binomial system
- B biological method
- C dichotomous key
- D hierarchical classification

- 2 Living organisms have a number of characteristics in common.

Which characteristics are true for all living organisms?

A	breathing	excretion	growth
B	egestion	growth	reproduction
C	excretion	photosynthesis	respiration
D	excretion	reproduction	respiration

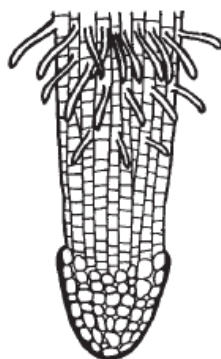
- 3 Name the function of the adjustment knob in the light microscope.

- A to form a magnified image of the specimen
- B to regulate the amount of light that goes through the specimen
- C it moves the lenses up and down to focus in on the specimen
- D to support the specimen when it is clamped on the stage

- 4 Which set of characteristics is common to both a palisade cell of a leaf and a human liver cell?

- A cell wall, cell membrane, nucleus
- B cell membrane, cytoplasm, nucleus
- C cell wall, nucleus, chloroplasts
- D chloroplasts, cell wall, cytoplasm

- 5 The diagram shows part of a plant.



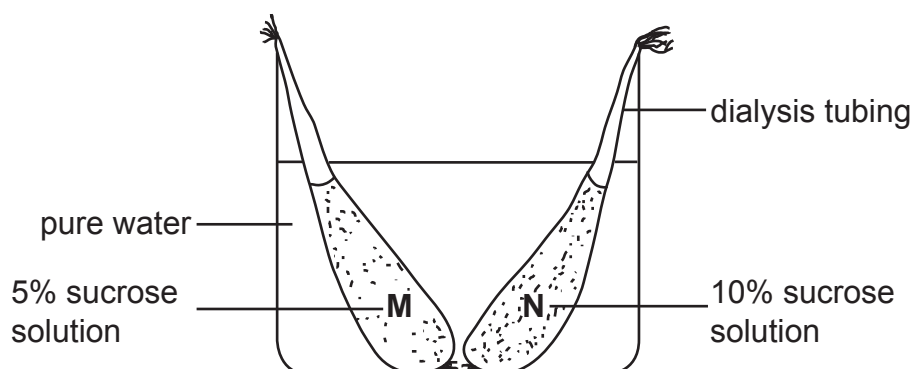
Which level of organisation does this section represent?

- A cell  
B organ  
C organ system  
D tissue
- 6 Nitrates are important minerals for plant growth. They are absorbed into root hair cells by active transport.

Which shows the conditions necessary for active transport to occur?

	concentration of nitrates in soil	concentration of nitrates in root hair cells	energy required
A	high	low	yes
B	high	low	no
C	low	high	yes
D	low	high	no

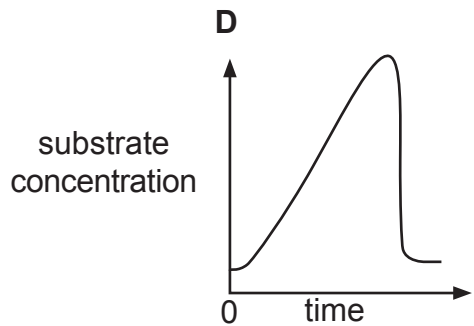
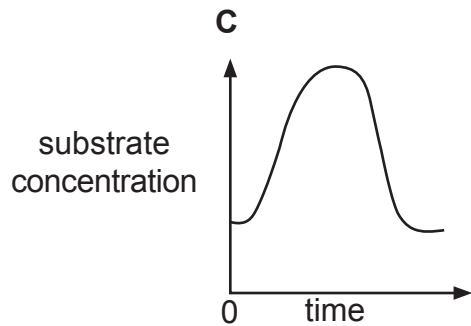
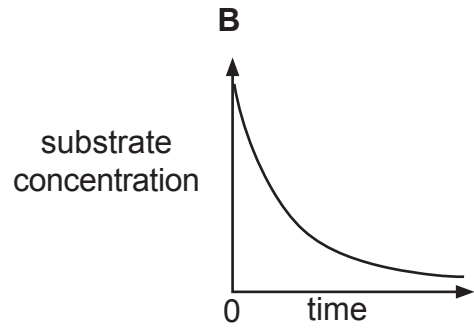
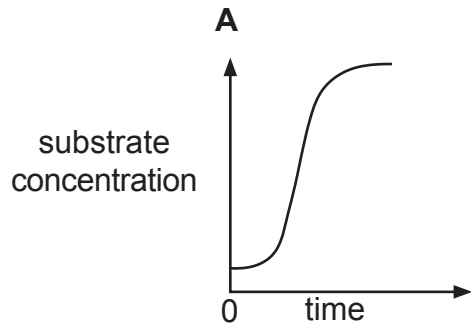
- 7 The diagram shows two bags of dialysis tubing filled with sucrose solutions and placed in a beaker with pure water.



What will happen to the volume of the solution in the two bags after one hour?

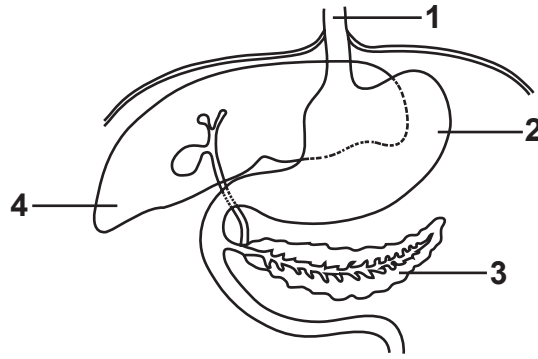
- A M has increased; N has decreased  
B M has decreased; N has increased  
C M has increased more than N  
D N has increased more than M

- 8 Which graph represents the changes in substrate concentration during the course of an enzyme controlled reaction?



- 9 Which combination of enzymes would be most effective in removing egg and butter stains?
- A** amylase and maltase
  - B** lipase and amylase
  - C** maltase and protease
  - D** protease and lipase
- 10 Which substance is absorbed from the soil by plants to make chlorophyll?
- A** calcium ions
  - B** magnesium ions
  - C** nitrate ions
  - D** phosphate ions

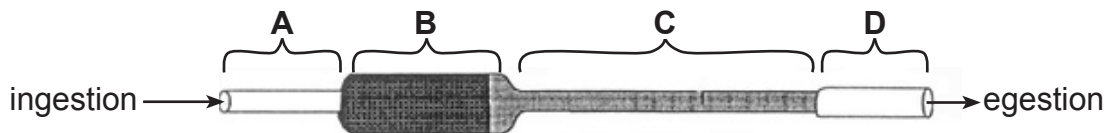
11 Which two structures produce substances involved in the digestion of fat?



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

12 The diagram shows a diagrammatic representation of the human alimentary canal.

In which part are villi found?



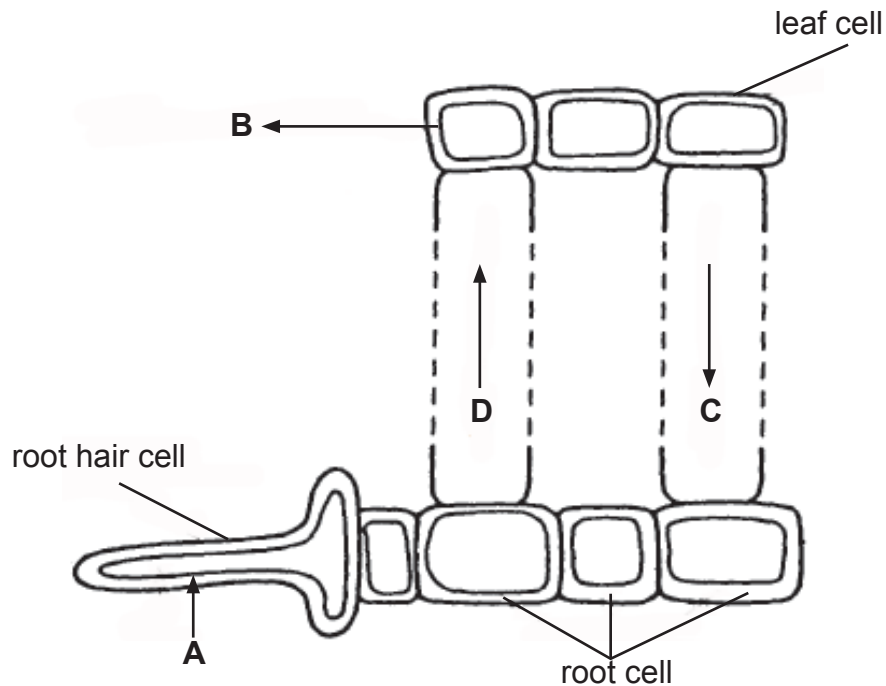
13 Porcupine grass can curl up into a needle shape. The stomata are located in sunken grooves on the underside of the leaf and are enclosed as the leaf curls up.

Which process is reduced by these adaptations?

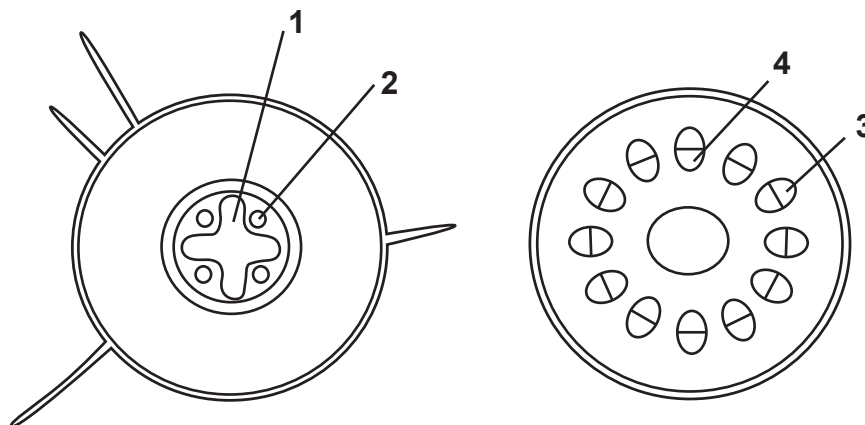
- A conduction
- B pollination
- C translocation
- D transpiration

- 14** The diagram shows the parts of a plant associated with the transport of substances through the plant.

Which arrow shows the translocation of sucrose during daylight?



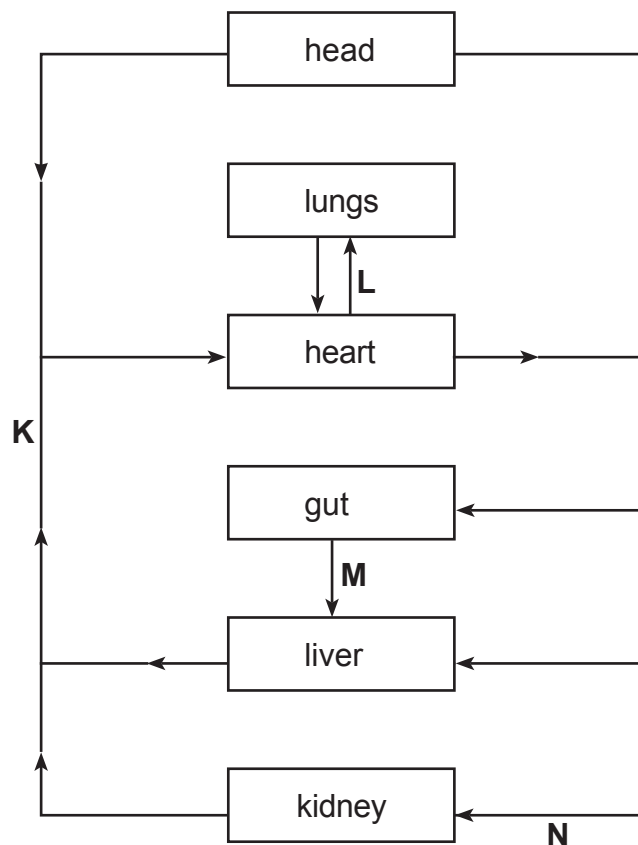
- 15** The diagrams show cross sections of a root and a stem of a dicotyledonous plant which had been sprayed with systemic pesticides.



In which parts will the pesticides be transported?

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

16 The diagram shows the blood circulation of a human.



What are blood vessels **K**, **L**, **M** and **N**?

	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>
<b>A</b>	hepatic portal vein	vena cava	renal artery	pulmonary artery
<b>B</b>	pulmonary artery	renal artery	vena cava	hepatic portal vein
<b>C</b>	renal artery	hepatic portal vein	pulmonary vein	vena cava
<b>D</b>	vena cava	pulmonary artery	hepatic portal vein	renal artery

17 Which blood component is matched with its correct function?

	<b>blood component</b>	<b>function</b>
<b>A</b>	lymphocytes	digest pathogens
<b>B</b>	phagocytes	engulf pathogens
<b>C</b>	plasma	clot blood
<b>D</b>	platelets	transport oxygen

- 18 The diagram shows an incomplete equation for anaerobic respiration in muscles.



Which substance is represented by X?

- A carbon dioxide
  - B ethanol
  - C lactic acid
  - D water
- 19 The table below compares three types of blood vessels.

	blood vessel 1	blood vessel 2	blood vessel 3
flow of blood	to heart	in tissues	to body
blood pressure	low	falling	very high
valves	present	none	none

What are these blood vessels?

	blood vessel 1	blood vessel 2	blood vessel 3
A	artery	capillary	vein
B	artery	vein	capillary
C	capillary	vein	vein
D	vein	capillary	artery

- 20 Which row of the table describes how the percentage of carbon dioxide and oxygen is different in expired air compared to inspired air for a human?

percentage of gas in expired air		
	carbon dioxide	oxygen
A	decreased	decreased
B	decreased	increased
C	increased	decreased
D	increased	increased

- 21 Which is the correct pathway of air into the body?

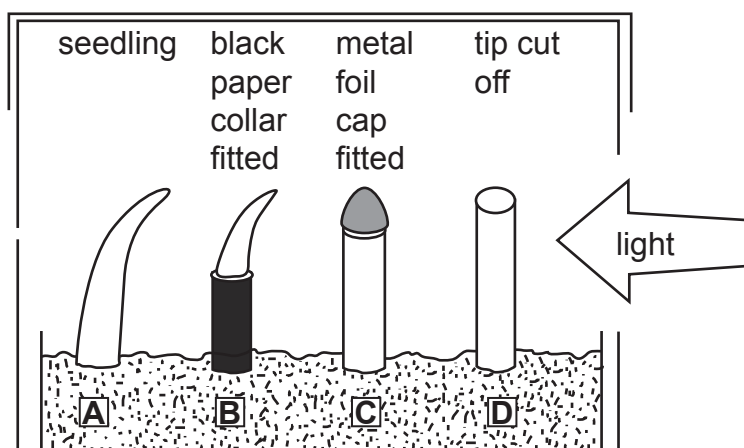
- A nasal cavity → trachea → bronchus → bronchioles → alveolus
- B nasal cavity → bronchus → bronchioles → trachea → alveolus
- C nasal cavity → trachea → bronchioles → bronchus → alveolus
- D nasal cavity → bronchus → trachea → bronchioles → alveolus



22 What is the plant growth response to gravity called?

- A chemotropism
- B geotropism
- C hydrotropism
- D phototropism

23 Oat seedlings were planted in a box with a hole cut at one end. The seedlings were prepared in different ways.



Which seedling **A**, **B**, **C** or **D** is the control in the experiment?

24 A boy accidentally touches a very hot object and immediately takes his hand away.

What is the effector in this reflex action?

- A a heat receptor in his hand
- B a motor neurone
- C a muscle in his arm
- D the spinal cord

25 The table gives statements about nervous and hormonal control systems in humans that are incorrect in many ways.

Which row shows correct features of both nervous control and hormonal control?

	nervous control	hormonal control
A	extremely rapid	originate from sense organs
B	impulse is electrical	travel through neurons
C	originate from sense organs	travel through blood
D	slow	impulse is chemical

**26** The abuse of drugs has negative effects on the human body.

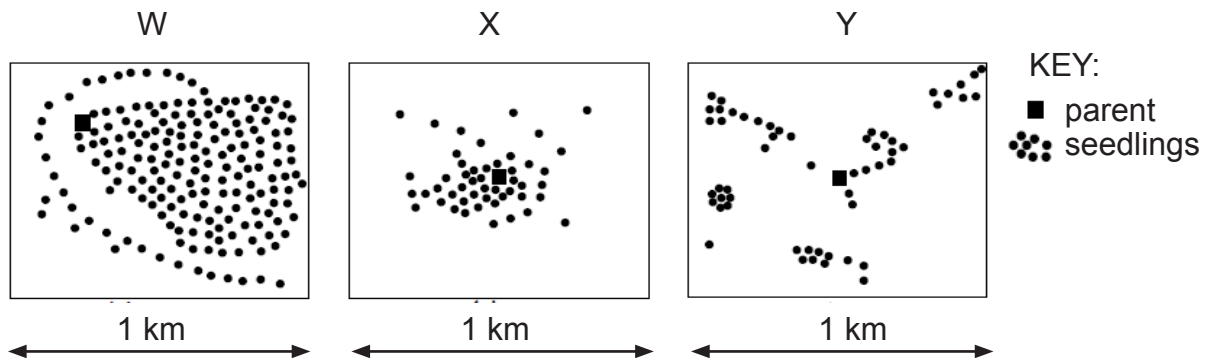
Which organ is permanently damaged by the abuse of alcohol?

- A** ear
- B** large intestine
- C** liver
- D** pancreas

**27** The fruits of three species of plants are shown below.



The dispersal patterns W, X and Y of these three species are shown below.

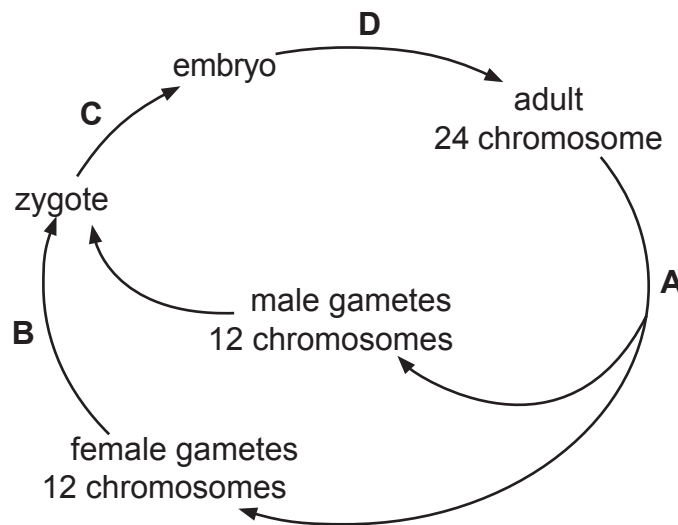


Which row shows the dispersal pattern of each species?

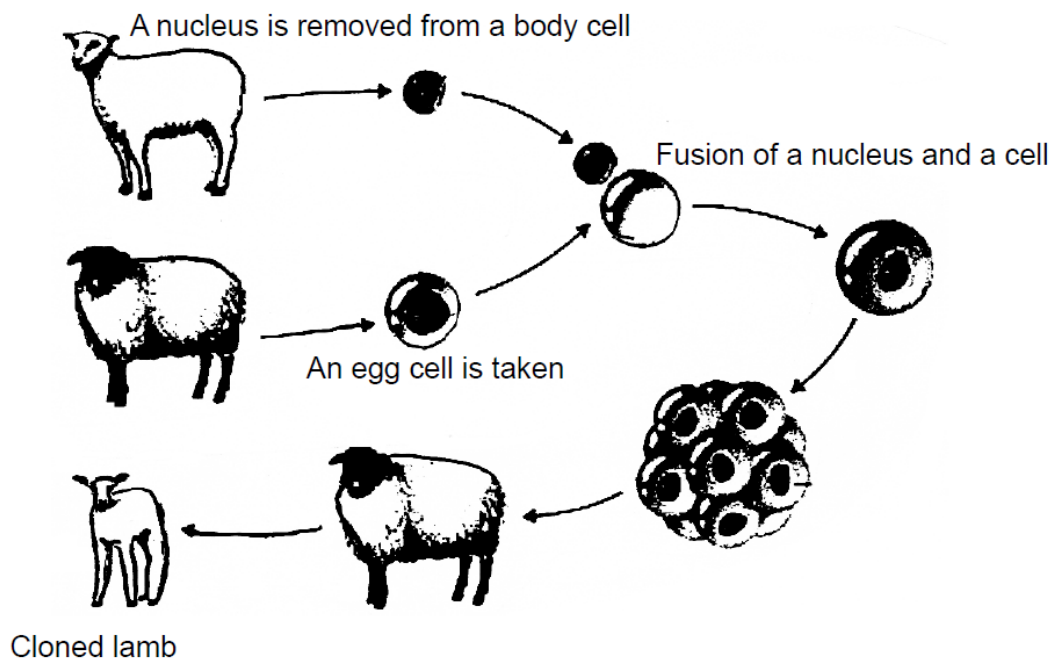
	species 1	species 2	species 3
<b>A</b>	X	Y	W
<b>B</b>	Y	W	X
<b>C</b>	Y	X	W
<b>D</b>	W	X	Y

- 28 The diagram shows the number of chromosomes at different stages of the life cycle of an organism.

At which stage does meiosis take place?



- 29 The diagram shows the basic principles during cloning of a sheep.



What must happen to the egg cell before it can fuse with the donor cell nucleus?

- A the egg cytoplasm must be removed
- B the egg cell membrane must be removed
- C the egg nucleus must be removed
- D the egg must divide by meiosis

**30** In which part of the human body are oestrogen and progesterone produced?

- A** mammary glands
- B** ovary
- C** prostate gland
- D** testis

**31** Which diagram shows a method of birth control that prevents a zygote from implanting?



**A**



**B**



**C**



**D**

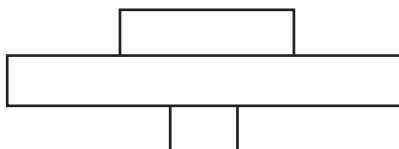
**32** Which is a symptom of gonorrhoea in men?

- A** damage to the liver
- B** fever in the body
- C** a rash on parts of the body
- D** discharge from the tip of the penis

**33** Which of the lists below is the correct sequence leading to pregnancy?

- A** fertilisation, implantation, menstruation
- B** implantation, ovulation, menstruation
- C** menstruation, fertilisation, ovulation
- D** ovulation, fertilisation, implantation

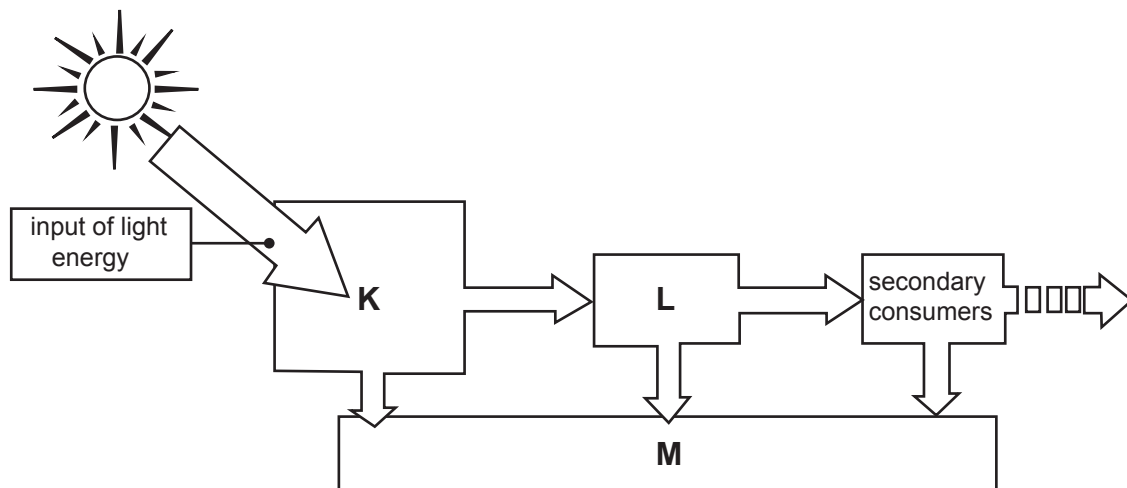
- 34** Cross-pollination is defined as the transfer of pollen from
- A** an anther to a stigma on a different plant of a different species.
  - B** an anther to a stigma on a different plant of the same species.
  - C** a stigma to the anther on a different plant of a different species.
  - D** a stigma to an anther on a different plant of the same species.
- 35** What are the ideal environmental conditions for germination?
- A** cold, dry, no oxygen present
  - B** cold, moist, oxygen present
  - C** warm, dry, no oxygen present
  - D** warm, moist, oxygen present
- 36** Which of the following food chains fits the pyramid of numbers below?



- A** grass → insects → birds
  - B** grass → rabbits → fox
  - C** tree → insects → birds
  - D** tree → monkeys → fleas
- 37** Disease, food supply and predation are factors which affect the size of a population.
- Which changes in these factors would result in maximum population growth?

	disease	food supply	predation
<b>A</b>	decrease	increase	decrease
<b>B</b>	decrease	decrease	increase
<b>C</b>	increase	decrease	increase
<b>D</b>	increase	increase	decrease

38 The diagram shows the flow of energy through an ecosystem.

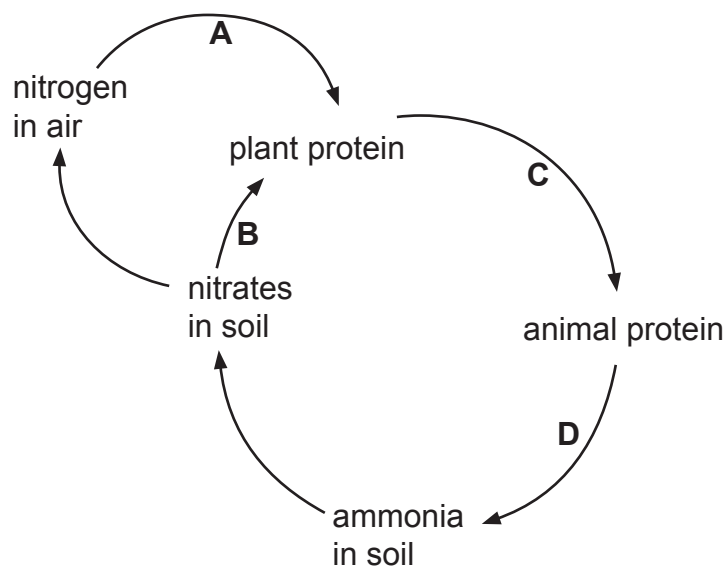


What are **K**, **L** and **M**?

	<b>K</b>	<b>L</b>	<b>M</b>
<b>A</b>	decomposers	producers	herbivores
<b>B</b>	herbivores	decomposers	producers
<b>C</b>	producers	decomposers	herbivores
<b>D</b>	producers	herbivores	decomposers

39 The diagram shows part of the nitrogen cycle.

In which part, **A**, **B**, **C** or **D** does decomposition occur?



40 Which term describes the maintenance of the environment and natural resources?

- A** biodiversity
- B** conservation
- C** deforestation
- D** recycling

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