UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/13**

Paper 1 Multiple Choice **May/June 2012**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

9602180458

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, highlighters, glue or correction fluid.
Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on 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.

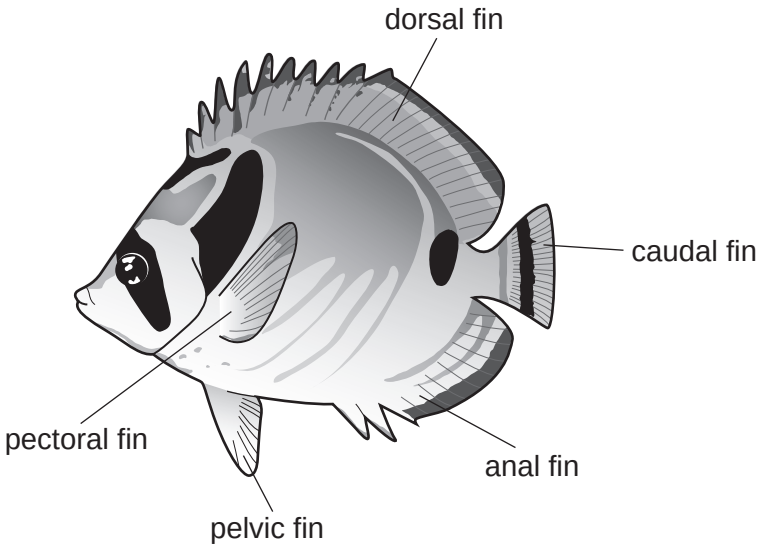
Read the instructions on the Answer Sheet very carefully.

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 booklet.

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

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1 The diagram shows a fish.



Use the key to identify the fish.

1 black stripe across the eye ..... go to 2

no black stripe across the eye ..... **A**

2 black stripe on caudal fin ..... go to 3

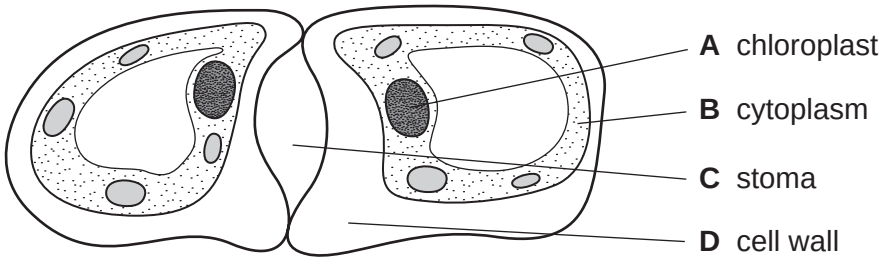
no black stripe on caudal fin ..... **B**

3 black spot below dorsal fin ..... **C**

no black spot below dorsal fin ..... **D**

2 The diagram shows a student's drawing of guard cells.

Which label is **not** correct?



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3 A living organism, X, can make its own food, get rid of toxic materials and detect and respond to stimuli.

What **other** four processes must organism X carry out to stay alive?

A excretion, growth, movement, sensitivity

B excretion, growth, nutrition, respiration

C growth, movement, reproduction, respiration

D movement, reproduction, respiration, sensitivity

4 Which group of organisms has the following features?

- three pairs of jointed legs
- three-part segmented body
- one pair of antennae

A arachnids

B crustaceans

C insects

D myriapods

5 The table shows some characteristics of four different vertebrates.

Which vertebrate is a reptile?

	fins	legs	scales	hair
A	✓	✗	✓	✗
B	✗	✓	✓	✗
C	✗	✓	✗	✗
D	✗	✓	✗	✓

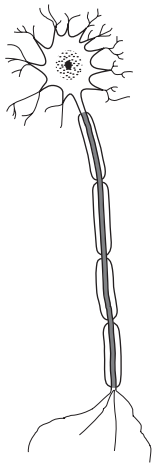
key

✓ = feature present

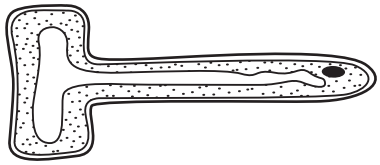
✗ = feature absent

6 Which diagram shows a plant cell?

A



B



C



D



7 Why do some root cells have root hairs?

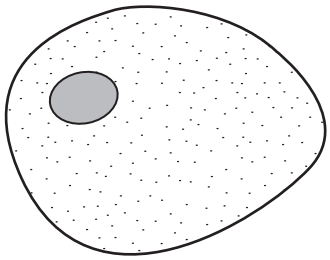
A for the maintenance of the temperature of the cell sap

B to increase the surface area of the cells

C to increase the volume of the cell sap

D to provide a place for cell nuclei

8 The diagram shows a liver cell.



Which structure is found in a palisade cell that is **not** present in this liver cell?

A cell membrane

B chloroplast

C cytoplasm

D nucleus

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9 A frog's skin is permeable to oxygen and carbon dioxide.

When a frog is swimming in pond water, in which directions will oxygen and carbon dioxide diffuse?

	from the frog's skin into the water	from the water into the frog's skin
A	carbon dioxide	oxygen
B	carbon dioxide and oxygen	–
C	oxygen	carbon dioxide
D	–	carbon dioxide and oxygen

10 Which statement about cells or tissues, is correct?

A Cells in the respiratory tract are long and thin.

B Muscle cells are biconcave.

C Red blood cells have no nucleus.

D Xylem vessels have ciliated cells.

11 Which structures **must** be present in a cell for osmosis to take place?

A cell (sap) vacuole and cell wall

B cell wall and cell membrane

C chloroplast and cytoplasm

D cytoplasm and cell membrane

12 Which chemical reaction takes place in the stomach?

A Proteins are digested by protease.

B Proteins are digested into fatty acids.

C Starch is digested into amino acids.

D Starch is digested by lipase.

13 A person has bleeding gums.

This could be caused by a lack of which nutrient?

A calcium

B iron

C vitamin C

D vitamin D

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14 Why does chewing food speed up digestion?

A Bacteria in the food are killed.

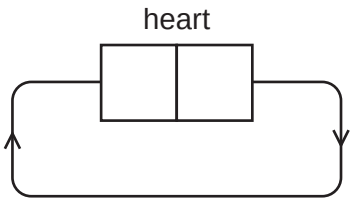
B Food is mixed with protease.

C The surface area of the food is increased.

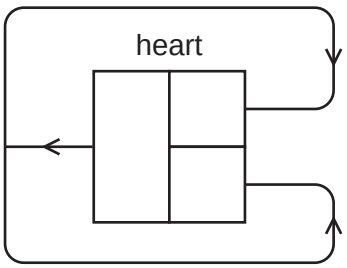
D The taste of food is improved.

15 Which diagram shows the human double circulatory system?

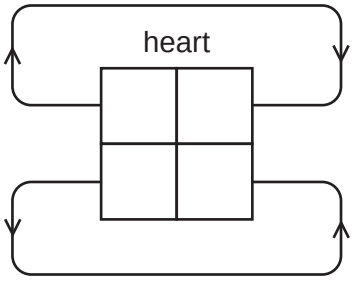
A



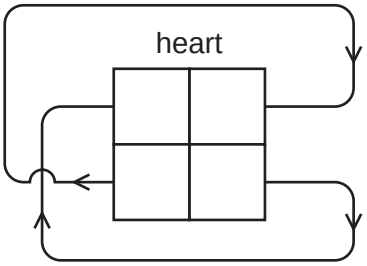
B



C



D



16 Which row correctly identifies the chemical elements found in proteins?

	carbon	hydrogen	oxygen	nitrogen
A	✓	✓	✓	✓
B	✓	✓	✓	✗
C	✓	✗	✓	✗
D	✗	✓	✗	✓

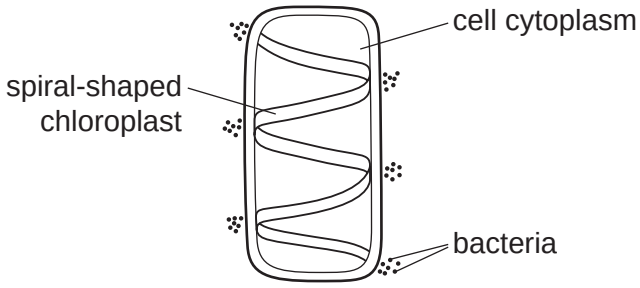
key

✓ = present

✗ = absent

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17 The diagram shows a cell with groups of bacteria around its edge.



The bacteria move to areas of high oxygen concentration.

Which process in the cell causes the bacteria to form these groups?

A digestion

B photosynthesis

C reproduction

D respiration

18 The table shows the main contents of four meals.

Which meal will be the most effective at preventing constipation?

	g / 100 g			
	carbohydrate	fat	fibre (roughage)	protein
A	18	12	8	25
B	30	32	2	12
C	38	4	22	10
D	48	15	10	5

19 Which process depends on energy from respiration?

A diffusion

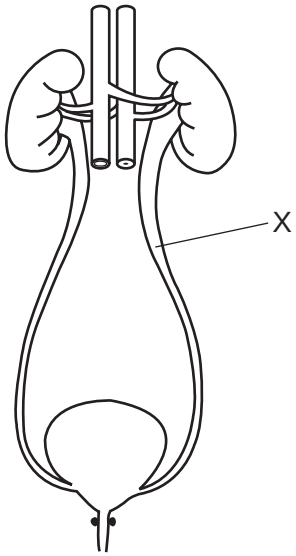
B osmosis

C peristalsis

D photosynthesis

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20 The diagram shows the human urinary system.



Which substance is **not** found in the liquid at X in a healthy person?

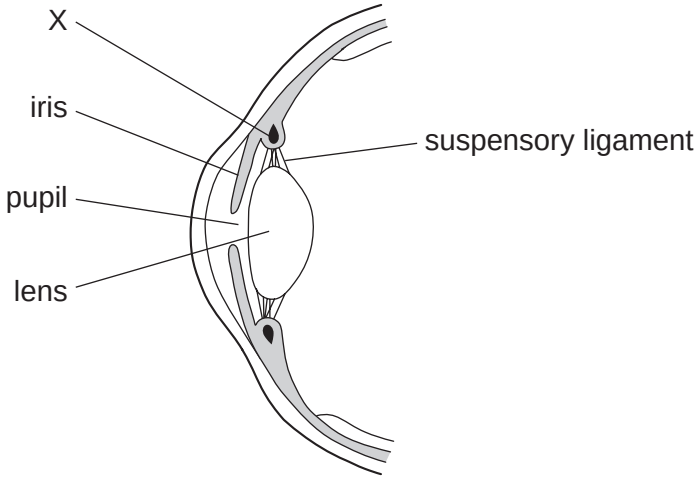
A glucose

B salt

C toxins

D urea

21 The diagram shows a section through part of the eye.



X is a circular muscle.

What effect does it have when it contracts?

A decreases the size of the pupil

B increases the size of the pupil

C pulls on the lens, decreasing its curvature

D reduces the pull on the lens, increasing its curvature

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22 Which set of conditions would make the percentage of water in urine decrease the most?

	conditions	
	temperature of the surroundings	amount of activity
A	low	low
B	low	high
C	high	low
D	high	high

23 What is the equation for anaerobic respiration in yeast?

A glucose + oxygen → carbon dioxide + water

B glucose → alcohol + carbon dioxide

C glucose → alcohol + water

D glucose → lactic acid + water

24 A natural method of birth control assumes that sperms live for three days after intercourse, ovulation occurs between days 13-15 of the menstrual cycle and released ova live for 36 hours.

On which day of the cycle should intercourse **not** result in pregnancy?

A day 7 **B** day 10 **C** day 12 **D** day 16

25 Read the following sentence.

> In order to prevent the human body from losing heat, the arterioles supplying the skin become narrow.

Which process does this sentence describe?

A constriction

B shivering

C sweating

D vasodilation

26 Which statement describes human cells formed by meiosis?

A They are genetically identical and they become gametes.

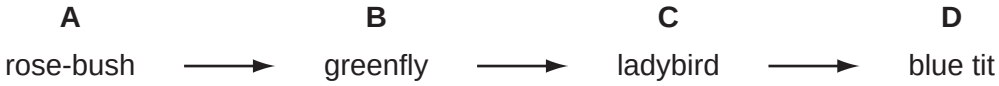
B They are genetically identical and they become tissues.

C They are not genetically identical and they become gametes.

D They are not genetically identical and they become tissues.

27 The diagram shows a food chain.

Which organism is the producer?



28 What special dietary advice should be given to a pregnant woman?

A Eat less fibre (roughage).

B Eat less protein.

C Eat plenty of fat.

D Eat plenty of iron.

29 In addition to a suitable temperature, what else is necessary for seed germination?

A carbon dioxide and sunlight

B mineral ions only

C sunlight only

D water and oxygen

30 A short-toed animal was crossed with a long-toed animal of the same species. All the offspring had short toes. One of these offspring was crossed with another long-toed animal of the same species.

Which ratio of short-toed to long-toed animals should be expected?

A 1 : 1 **B** 2 : 1 **C** 3 : 1 **D** 4 : 1

31 Which types of variation can be inherited?

	variation caused by genes	variation caused by the environment
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

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32 Which diagram shows the flow of energy in an ecosystem?

A Sun → plants → animals → bacteria

B Sun ⇄ plants ⇄ animals ⇄ bacteria

C Sun → plants ⇄ animals ⇄ bacteria

D Sun → plants → animals → bacteria (bacteria → Sun)

33 Which process is an example of development?

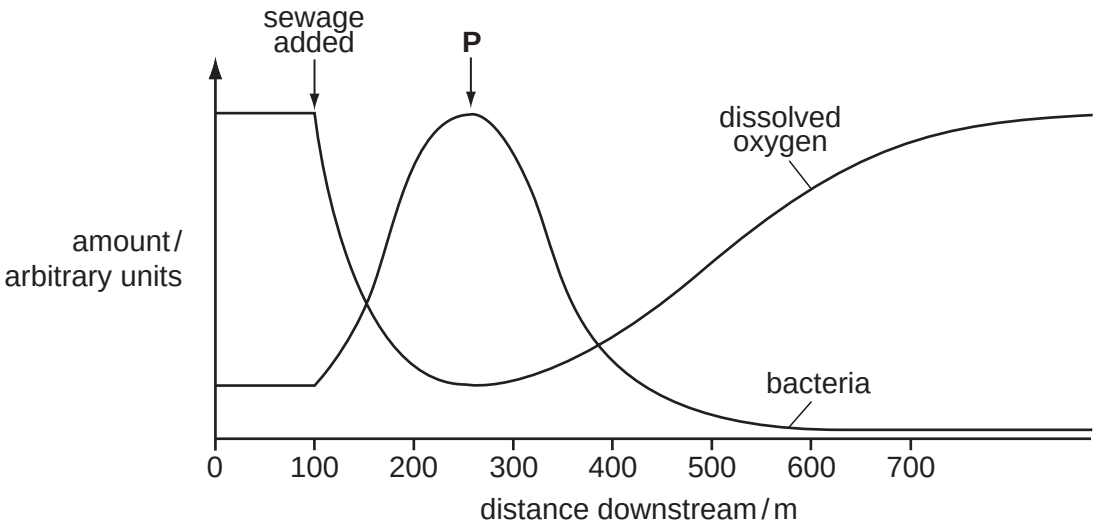
A a cell absorbing water and increasing in size

B a cell dividing by mitosis

C a root tip cell becoming a phloem cell

D a sperm cell fertilising an egg cell

34 The graph shows how oxygen concentration and the number of bacteria change when sewage is added to a river.



What describes the oxygen concentration and the number of bacteria between the point at which sewage is added and point **P**?

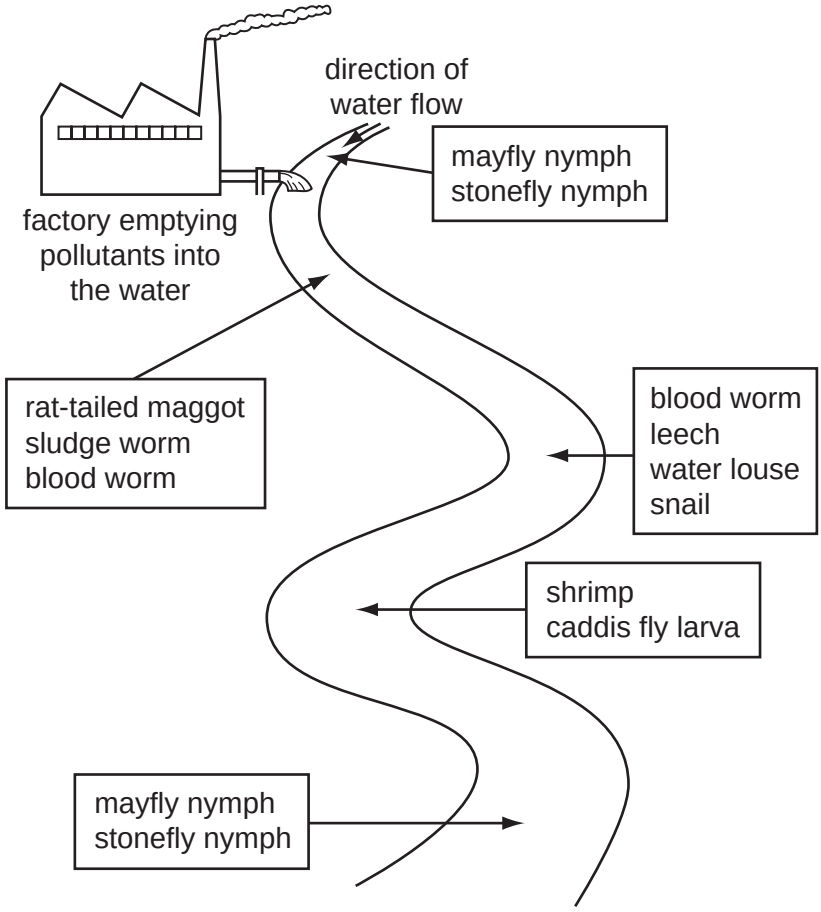
A Oxygen concentration and number of bacteria stay the same.

B Oxygen concentration decreases and number of bacteria increases.

C Oxygen concentration increases and number of bacteria decreases.

D Oxygen concentration remains the same and number of bacteria increases.

35 The diagram shows the results of a survey on the types of animals found along a stretch of river near to a factory.



Which of the following animals lives in the most polluted water?

A blood worm

B caddis fly larva

C leech

D stonefly nymph

36 During aerobic respiration glucose is broken down.

This process recycles

A carbon only.

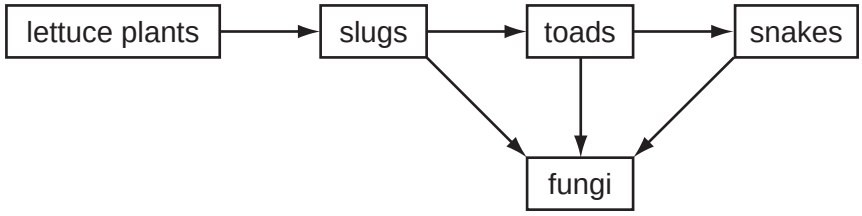
B carbon and water.

C energy only.

D water only.

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37 The diagram shows a food web.



Fungi are decomposers. What is their importance in this food web?

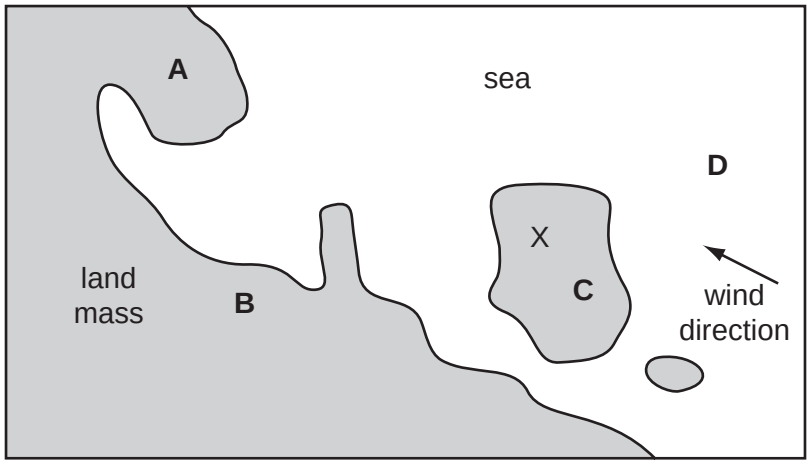
A They control the number of toads.

B They provide energy for plant growth.

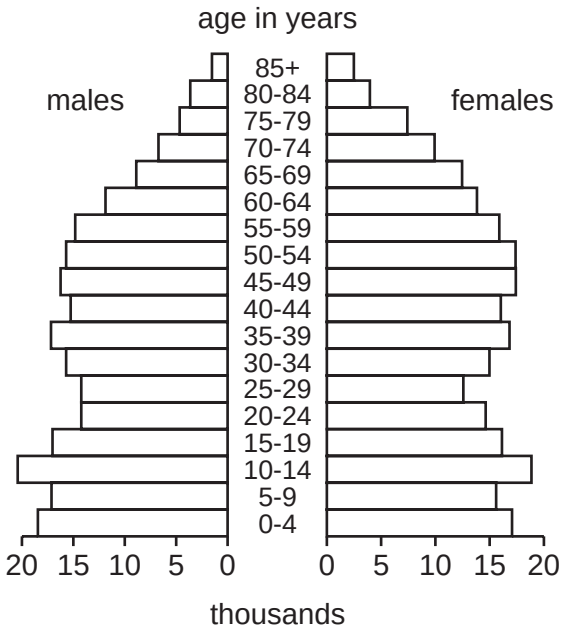
C They provide food for snakes.

D They release minerals for plant growth.

38 On the map shown, sulfur dioxide is produced at X. Which region is most likely to experience acid rain?



39 What name is given to the diagram below?



A a food web pyramid

B a population pyramid

C a pyramid of biomass

D a pyramid of energy

40 In an ecosystem, which are the only organisms to remove carbon dioxide from the atmosphere?

A carnivores

B decomposers

C herbivores

D producers

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