CCEA GCSE BIOLOGY (2003 SPECIFICATION)

BIOLOGY



EXAM QUESTION PACK

PAPER 1 FOUNDATION TIER G0901 PAPERS

STEMUP

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Rewarding Learning

General Certificate of Secondary Education
2012

Science: Biology

Paper 1
Foundation Tier

[G0901]

WEDNESDAY 30 MAY, AFTERNOON

MARK SCHEME

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						AVAILABLE MARKS
1	**(a)**					

Scales	Internal fertilization	Constant body temperature	
✓ *(given)*	✗	✗	[1]
✓	✓ *(given)*	✗	[1]
✗	✓	✓ *(given)*	[1]

[3]

(b) Skin moist/not waterproof/skin needs moisture/skin would dry out;
Eggs laid/tadpoles develop in water; [2] 5

2 **(a)** Crawling animals **fall in**;
Cannot get out/drown/trapped/cannot escape; [2]

(b) Pooter;
Sweep net;
Quadrat; [3] 5

3 **(a)** 1800; [1]

(b) 1451; – 1900; [2]

(c) Continuous; [1]

(d) Environment/food/diet; [1] 5

4 **(a)** Fungi/mould; [1]

(b) Killed/dies; [1]

(c) **(i)** Respiration/fermentation; [1]

(ii) **Carbon dioxide** bubbles;
Trapped in the dough; [2] 5

5 **(a)** Any **two** from:
Increases;
Levels off/stays steady;
Then decreases; [2]

(b) Birth rate equals death rate; [1]

(c) Any **two** from:
Lack of food;
Predation;
Climate/cold temperatures;
Disease; [2] 5

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				AVAILABLE MARKS
6	**(a)**	Tumour;	[1]	
	(b)	Any **one** from: Shape/described correctly; Size/described correctly; Cancer cell has thicker membrane/accept converse;	[1]	
	(c)	Any **two** from: Cancer/tumour cells escape into blood; Spread/carried to other parts of the body; Form secondary tumours;	[2]	
	(d)	Tar;	[1]	5
7	**(a)**	Sun/sunlight;	[1]	
	(b)	**(i)** Holly;	[1]	
		(ii) Changes light energy into chemical energy/photosynthesis/produces sugar (starch); Provides energy for/used as food by other organisms;	[2]	
	(c)	(Holly) leaf-miner/insect;	[1]	
	(d)	Web;	[1]	6
8	**(a)**	A – Respiration; B – Photosynthesis; C – Feeding/consumption/eating;	[3]	
	(b)	Bacteria/fungus;	[1]	
	(c)	Produces CO_2; Increases concentration in the air/more in air;	[2]	6
9	**(a)**	A – Cytoplasm; B – Chloroplast; C – Nucleus;	[3]	
	(b)	Cell wall; Vacuole;	[2]	5

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				AVAILABLE MARKS
10	**(a)**	90 ÷ 100 000/0.0009 (or 0.001 3dp); 1 742 000 × 0.0009; (1568 = [2]) Accept 1567.8 or 1567	[2]	
	(b)	**(i)** Blockage; In **coronary** blood vessel;	[2]	
		(ii) No oxygen/sugar reaches heart/**muscle**/**cells**/**tissue (organs/cells)**;	[1]	
	(c)	Exercise (regularly);	[1]	6
11	**(a)**	Purple; Red; Respiration;	[3]	
	(b)	Control;	[1]	
	(c)	Size of leaf/type of leaf; Volume of indicator; Temperature; Time;	[2]	6
12	**(a)**	Mechanical – Condom/Cap/IUD/coil; Chemical – Pill/Spermicide;	[2]	
	(b)	Any **one** from: Permanent; Don't have to remember to take it/use before intercourse;	[1]	
	(c)	Have to remember to take/side effects;	[1]	
	(d)	Abstain from intercourse; During (2–3) days **before and after** ovulation (/day 14 of cycle);	[2]	6
13	**(a)**	A – Uterus; B – Amnion; C – Cervix;	[3]	
	(b)	B – (Amnion) ruptures/bursts; C – (Cervix) dilates/widens;	[2]	
	(c)	Contracts; Pushing baby out;	[2]	7

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			AVAILABLE MARKS
14	**(a)**	45; 15; [2]	
	(b)	Energy/heat lost to – Atmosphere/air; Boiling tube/apparatus; [1]	
	(c)	Any **three** from: Gender – males require more energy than females; Age – younger people require more energy than older; Activity – people who are sporty require more energy; Pregnancy – woman needs extra energy for the growth of the foetus; [3]	
		Quality of written communication [2]	8
		Total	**80**

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Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2011

Science: Biology

Paper 1
Foundation Tier

[G0901]

G0901

THURSDAY 19 MAY, AFTERNOON

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all fourteen** questions.

INFORMATION FOR CANDIDATES

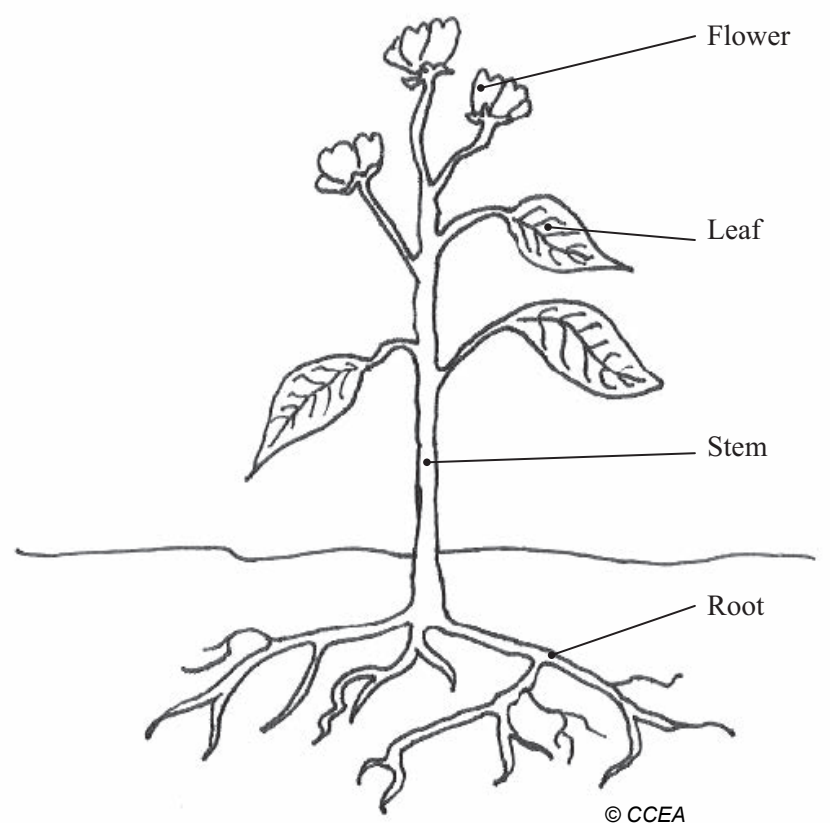
The total mark for this paper is 80.
Quality of written communication will be assessed in question **14(c)**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
Total Marks	

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Examiner Only	
Marks	Remark

1 The diagram shows the organs of a plant.



(a) Complete the table.

Organ	Function	
	Absorb water	[1]
Leaf		[1]
Flower		[1]

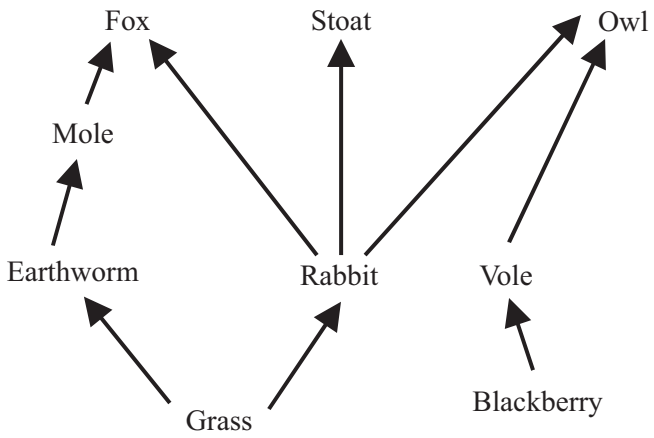
(b) Give **two** functions of the stem.

1. _____ [1]

2. _____ [1]

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2 The diagram shows a food web.



(a) Use the food web to complete the food chain.

		Mole	

[2]

(b) Name

the source of energy. _____ [1]

a producer. _____ [1]

(c) What would happen to the number of moles if all the foxes were killed?

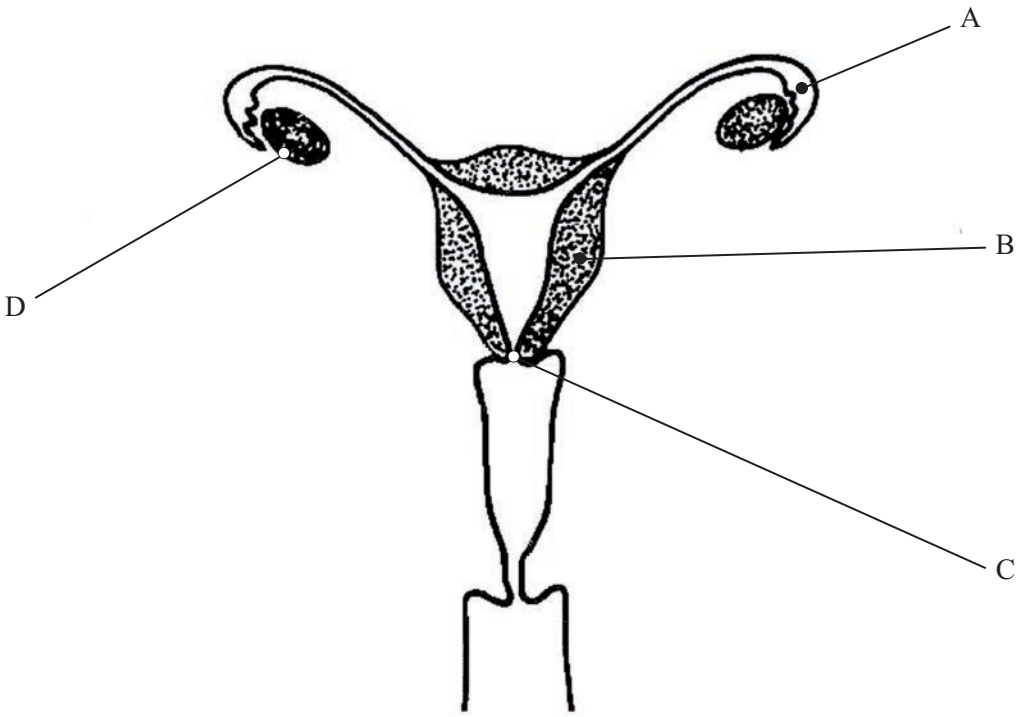
_____ [1]

Examiner Only	
Marks	Remark

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3 The diagram shows the female reproductive system.

Examiner Only	
Marks	Remark



© Biology Alive by J Bushell and P Nicholson, published by Collins Educational, 1985.
ISBN 0003277577. Reprinted by permission of Harper Collins Publishers Ltd.

(a) Label parts A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

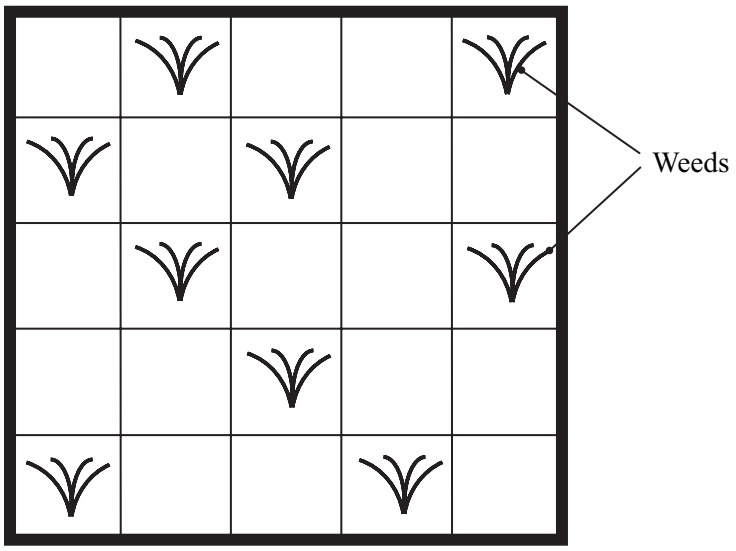
(b) What is the function of part D?

_____ [1]

(c) **On the diagram mark with an X** the place where sperm are released during sexual intercourse. [1]

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4 The diagram shows the apparatus used to sample the population of weeds on a lawn.



(a) Name the apparatus.

_____ [1]

The apparatus is divided up into 25 squares.

(b) Calculate the percentage of squares which contain weeds.
Show your working.

_____% [2]

(c) Explain why the apparatus must be randomly placed on the lawn.

_____

_____ [1]

(d) Suggest why this apparatus is not usually used to sample animal populations.

_____

_____ [1]

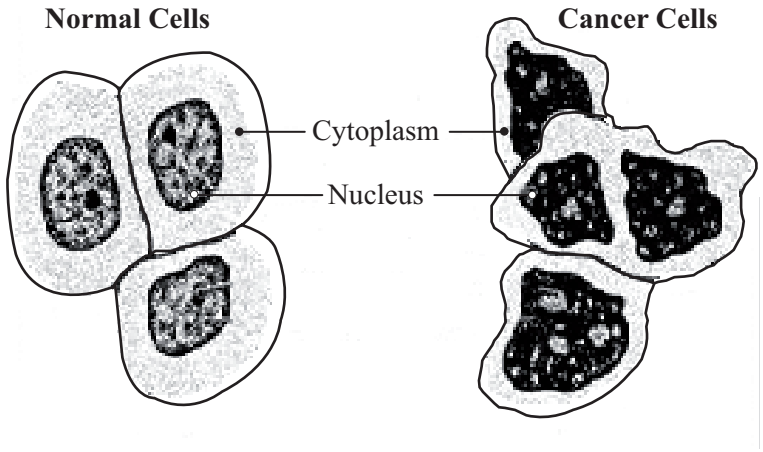
Examiner Only

Marks	Remark

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5 The diagrams show normal cells and cancer cells.

Examiner Only	
Marks	Remark



freeclipartnow.com

(a) Describe **two** differences, shown in the diagram, between normal cells and cancer cells.

1. _____

_____ [1]

2. _____

_____ [1]

(b) Give **one** way of treating cancer.

_____ [1]

(c) Explain why it is easier to treat a benign tumour than a malignant tumour.

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

6 The table shows the changes that occur during puberty in males and females.

(a) Complete the table by using **either** Yes **or** No in each blank.

Change during puberty	Male	Female	
Menstruation	No	Yes	
Voice deepens			[1]
Development of breasts			[1]
Growth of pubic hair			[1]

(b) What is menstruation?

_____

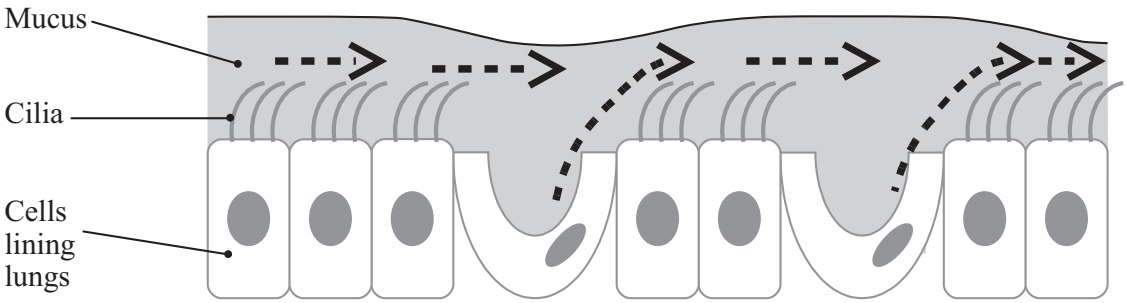
_____

_____ [2]

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Examiner Only	
Marks	Remark

7 **(a)** The diagram shows how the respiratory system prevents microbes entering the blood.



(i) Suggest the function of the

mucus. _____

_____ [1]

cilia. _____

_____ [1]

(ii) Give **one other** way the body prevents microbes **entering** the blood.

_____

_____ [1]

(b) A vaccine helps to prevent infections.

(i) What is a vaccine?

_____

_____

_____ [2]

(ii) Name the scientist who developed a vaccine for smallpox.

_____ [1]

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8 **(a)** Complete the table of some animal groups.

Animal group	Skin	Fertilization	Body temperature	Gas exchange surface
Fish		External	Not constant	
Amphibians	Moist	External		Skin
Birds	Feathers		Constant	Lungs

[2] [1] [1]

(b) Give **two** differences between reptiles and amphibians.

_____

_____

_____

_____ [2]

Examiner Only

Marks	Remark

9 **(a)** Complete the word equation for photosynthesis.

Carbon dioxide + [ ] → Light energy → Oxygen + [ ]

[ ]

[3]

Examiner Only

Marks	Remark

(b) Name **one** mineral required by plants and give its use.

_____

_____

_____ [2]

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10 Breast milk contains all the nutrients a baby needs in the correct proportions.

Examiner Only	
Marks	Remark

(a) Name the **food group** needed

to provide energy. _____ [1]

for growth. _____ [1]

Breast milk also contains antibodies.

(b) Explain the advantage of these to the baby.

_____

_____ [1]

(c) Suggest **two other** advantages of breast feeding.

_____

_____

_____ [2]

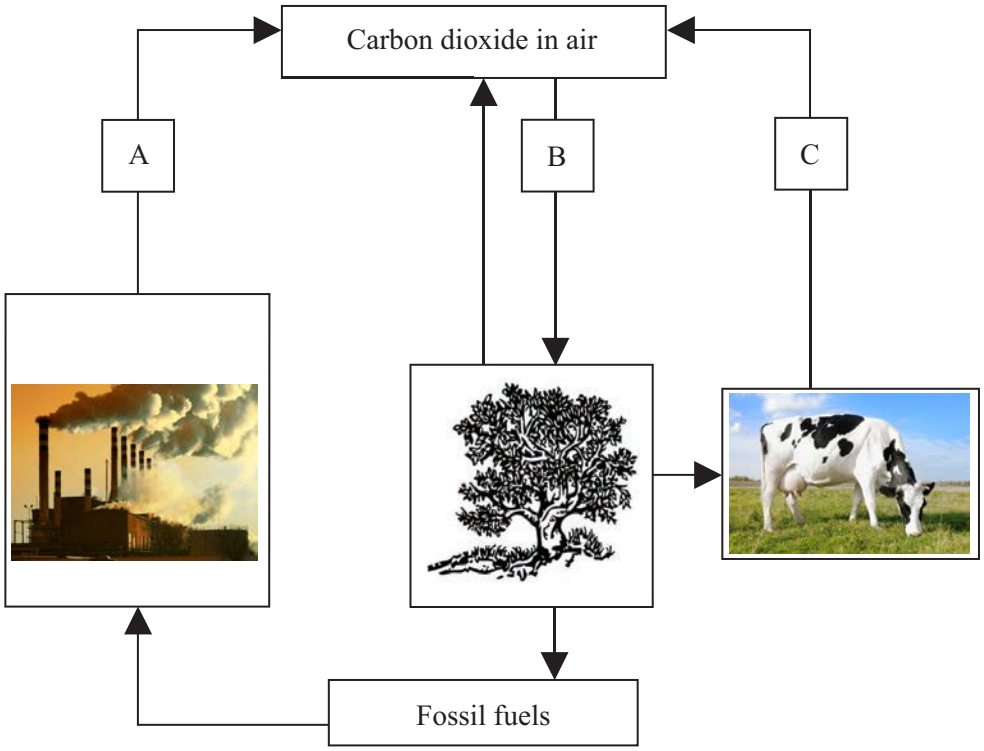
(d) Explain why HIV positive mothers are advised not to breast feed.

_____

_____ [1]

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11 The diagram shows part of the carbon cycle.



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http://classroomclipart.com/images/gallery/Clipart/Trees/tree_5.jpg
© Hemera / Thinkstock

(a) Name processes A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

(b) Describe how carbon, present in plant tissue, becomes a named carbon compound in an animal.

_____

_____

_____ [2]

(c) Name a fossil fuel.

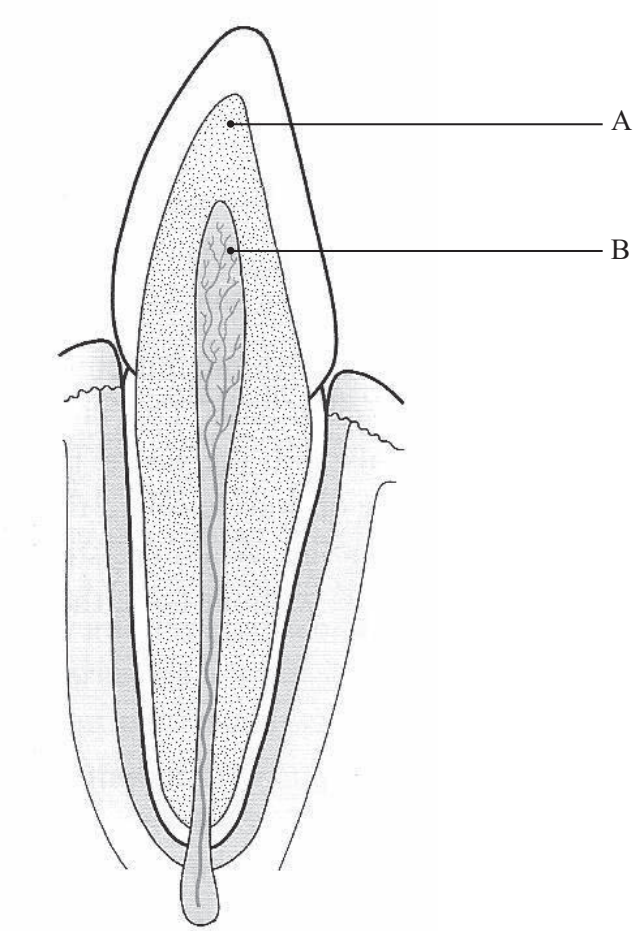
_____ [1]

Examiner Only

Marks	Remark

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12 The diagram shows the structure of a tooth.



© Adapted from Biology Lives by Morton Jenkins, published by Hodder & Stoughton, 2001. ISBN 0340790512.

(a) Name part A.

_____ [1]

(b) Name **one** type of tissue found in cavity B.

_____ [1]

(c) Describe the role of bacteria and sugar in tooth decay.

_____

_____

_____

_____ [2]

Examiner Only

Marks	Remark

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(d) Name the part of the tooth which is strengthened by regular use of fluoride toothpaste.

_____ [1]

One way of ensuring that people get enough fluoride is to add it to the public drinking water.

(e) Suggest **one** reason why some people may object to this.

_____

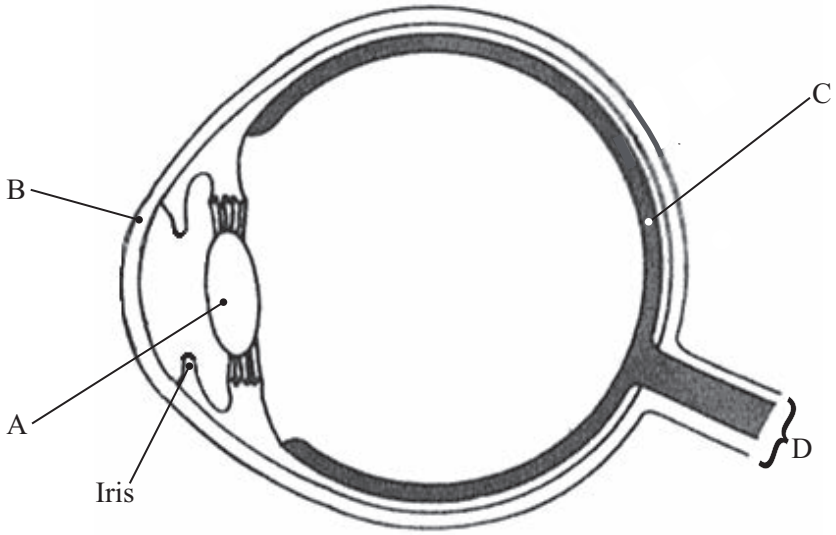
_____ [1]

Examiner Only	
Marks	Remark

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13 The diagram shows a simplified cross section of the eye.

Examiner Only	
Marks	Remark



(a) Name parts A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

(b) Name and give the function of part D.

_____

_____

_____ [2]

(c) Give **one** piece of evidence from the diagram, which suggests this eye is in low light conditions.

_____

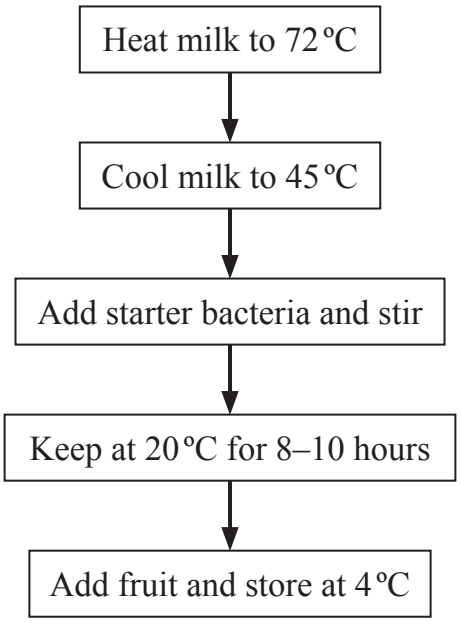
_____ [1]

(d) Name **one** structure which protects the eye from damage.

_____ [1]

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14 The flow diagram shows a method used to make yoghurt.



(a) Suggest why the milk is heated to 72 °C at the start.

_____ [1]

(b) Explain why starter bacteria are not added until after the milk has been cooled to 45 °C.

_____

_____ [1]

(c) Describe how the bacteria change the milk into yoghurt at 20 °C.
The quality of written communication will be assessed in this question.

_____

_____

_____

_____

_____ [3]

Quality of written communication [2]

(d) Explain why the yoghurt is stored at 4 °C.

_____

_____ [1]

Examiner Only

Marks	Remark

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Rewarding Learning

General Certificate of Secondary Education
2011

Science: Biology

Paper 1
Foundation Tier

[G0901]

THURSDAY 19 MAY, AFTERNOON

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	Root	[1]	
		absorb light/photosynthesis;	[1]	
		reproduction/produce seeds;	[1]	
	(b)	Support;	[1]	
		Transport water/food;	[1]	5
2	**(a)**	Grass, Earthworm, Fox; arrows;	[2]	
	(b)	Sun(light);	[1]	
		Grass/blackberry;	[1]	
	(c)	Mole number would increase;	[1]	5
3	**(a)**	**A** – Oviduct/fallopian tube;	[1]	
		B – Uterus;	[1]	
		C – Cervix;	[1]	
	(b)	To produce eggs/ova;	[1]	
	(c)	X in cervix/vagina;	[1]	5
4	**(a)**	Quadrat;	[1]	
	(b)	$9 \div 25 \times 100$ (accept 9×4); $= 36$;	[2]	
	(c)	Make sample representative/reduce bias;	[1]	
	(d)	Animals move;	[1]	5

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			AVAILABLE MARKS
5	**(a)**	*Any **TWO** from:* **Cytoplasm:** more cytoplasm in normal/less in cancer cells; **Nucleus:** only one nucleus in normal, more than one in cancer; Lighter nucleus in normal, darker in cancer; Irregular nucleus in cancer cells; **Cell shape:** more rounded in normal, irregular in cancer [2]	
	(b)	Surgical/chemotherapy/radiotherapy; [1]	
	(c)	Benign has a capsule/does not spread; More easily **removed**; [2] (Allow converse for malignant)	5

6 **(a)**

Change during puberty	Male	Female	
Menstruation			
Voice deepens	**Yes**	**No**	[1]
Development of breasts	**No**	**Yes**	[1]
Growth of pubic hair	**Yes**	**Yes**	[1]

(b) Breakdown of the uterus lining; [1]
Released **through the vagina**; [1] — 5

7 **(a)** **(i)** Mucus **traps** microbes/dust; [1]
Cilia **move mucus** (out of lungs); [1]

(ii) Skin/blood clotting/tears/stomach acid; [1]

(b) **(i)** Injection; of dead/weakened microbes; [2]

(ii) Jenner; [1] — 6

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				AVAILABLE MARKS
8	**(a)**	Scales;	[1]	
		Gills;	[1]	
		Not constant;	[1]	
		Internal;	[1]	
	(b)	*Any **TWO** from:*		
		Reptile shelled (leathery) egg, amphibia jelly egg;		
		Reptile eggs on land, amphibia eggs in water;		
		Reptiles dry scales, amphibia moist skin;		
		(Must be a comparison/comparative term)	[2]	6
9	**(a)**	Water;	[1]	
		Chlorophyll;	[1]	
		Sugar/glucose/starch;	[1]	
	(b)	Any ***PAIR [mineral + appropriate use]*** from:		
		Calcium; Cell walls;		
		OR Magnesium; Chlorophyll;		
		OR Nitrate; Growth/protein production/amino acid production;	[2]	5
10	**(a)**	Carbohydrates;	[1]	
		Proteins;	[1]	
	(b)	Protects baby from infection/confers immunity;	[1]	
	(c)	*Any **TWO** from:*		
		Convenience (correct temp/no sterilising bottles);		
		Maternal bond/security/love;		
		Easier absorbed/digested;		
		Easier to wean;		
		Helps prevent childhood diabetes;		
		Less cost;		
		Help prevent breast/ovarian cancer in mother; (Any two)	[2]	
	(d)	May pass virus on to baby/would be in breast milk;	[1]	6
11	**(a)**	A – combustion/burning;	[1]	
		B – photosynthesis;	[1]	
		C – respiration;	[1]	
	(b)	Animal eats plant;		
		made into animal		
		carbohydrates/fats/proteins;	[2]	
	(c)	Coal/natural gas/oil/peat;	[1]	6

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				AVAILABLE MARKS
12	**(a)**	Dentine;	[1]	
	(b)	Blood [named example]/nerve/neurone;	[1]	
	(c)	Bacteria feed on/respire/break down sugars from food; Produce **acid** which corrodes the **enamel**;	[2]	
	(d)	Enamel;	[1]	
	(e)	Lack of freedom of choice/excess can cause fluorosis;	[1]	6
13	**(a)**	A – lens; B – cornea; C – retina;	[1] [1] [1]	
	(b)	Optic nerve; carries impulses **to brain**;	[2]	
	(c)	Pupil dilated;	[1]	
	(d)	Eyelid/conjunctiva/eye socket;	[1]	7
14	**(a)**	To kill any **harmful** bacteria/microorganisms;	[1]	
	(b)	Starter bacteria killed by heating;	[1]	
	(c)	Any **three** from: Respiration; fermentation/anaerobic; Feed on sugar; produces acid; multiply/grow;	[3]	
		Quality of written communication	[2]	
	(d)	Slows microorganism growth/decay of yoghurt;	[1]	8
			Total	**80**

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Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2010

Science: Biology

Paper 1
Foundation Tier

[G0901]

G0901

FRIDAY 21 MAY, MORNING

TIME

1 hour

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all fourteen** questions.

INFORMATION FOR CANDIDATES

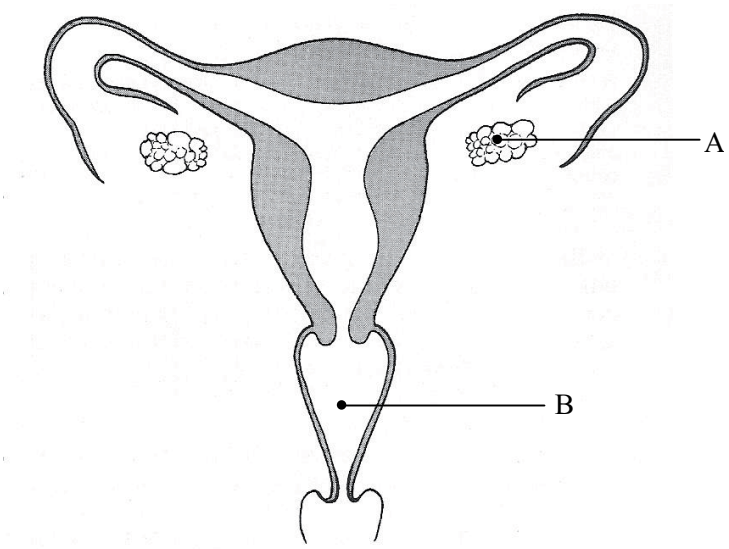
The total mark for this paper is 80.
Quality of written communication will be assessed in question **14(b)**
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	**Marks**
1	
2	
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11	
12	
13	
14	
Total Marks	

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Examiner Only	
Marks	Remark

1 The diagram shows a female reproductive system.



© Biology: a modern introduction by B S Beckett, published by Oxford University Press, 1976, ISBN 0199140367

(a) Name parts A and B.

A _____ [1]

B _____ [1]

(b) **On the diagram**, mark with an X where fertilization occurs. [1]

(c) Describe the process of fertilization.

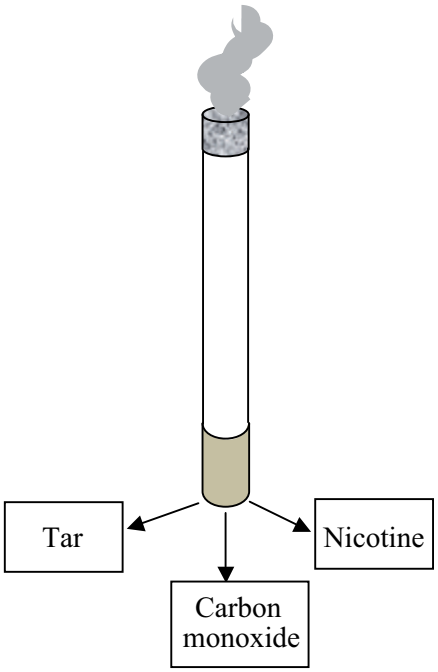
_____

_____

_____ [2]

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2 The diagram shows the main substances produced when smoking.



(a) Complete the table.

Substance	Effect on human body
Tar	
Nicotine	

[2]

(b) Explain why carbon monoxide is harmful to humans.

_____

_____

_____ [2]

(c) What is passive smoking?

_____

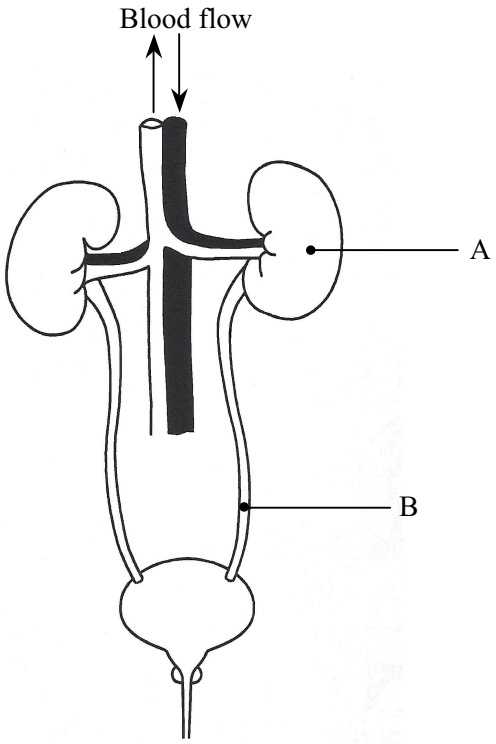
_____ [1]

Examiner Only

Marks	Remark

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3 The diagram shows the excretory system.



(a) Name parts A and B.

A _____ [1]

B _____ [1]

(b) **On the diagram** label the bladder with the letter X. [1]

(c) Describe the function of the bladder.

_____

_____

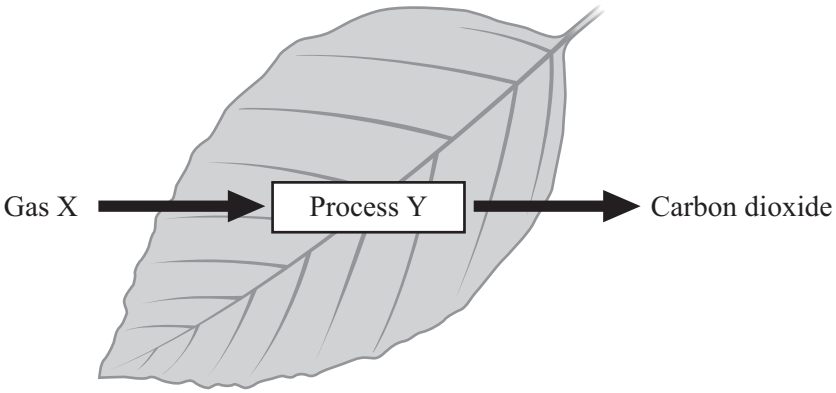
_____ [2]

Examiner Only

Marks	Remark

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4 The diagram shows the gas exchange in a leaf at night.



Source: G. B. B. Thomas, M. F. S. Thomas, BIOLOGY Functional, Systematic and Environmental, Hulton Educational Publications Ltd., 1978

(a) Name the gas X.

_____ [1]

(b) Name the process Y, which produces carbon dioxide.

_____ [1]

(c) Name the structures in the leaf surface which allow the carbon dioxide to leave the leaf.

_____ [1]

(d) (i) Name an indicator which can detect carbon dioxide.

_____ [1]

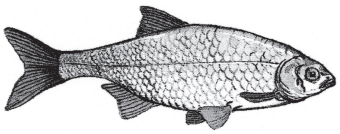
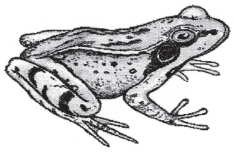
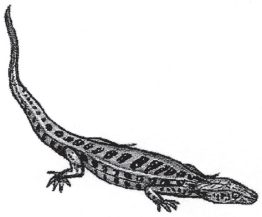
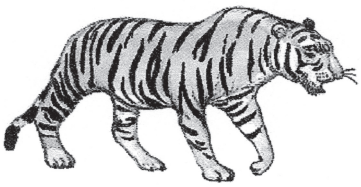
(ii) What colour will the indicator be when the carbon dioxide increases?

_____ [1]

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Marks	Remark

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5 The table shows the features of chordate groups.

Chordate group	Characteristics	Example
Fish	• Gills, scales and fins • Streamlined body • Live in water • Eggs laid in water	
Amphibians	• Lungs • Smooth, moist skin • Live in water and on land • Eggs laid in water	
Reptiles	• Lungs • Skin covered with tough dry scales • Live in water and on land • Eggs, with rubbery shells, laid on land	
Birds	• Lungs and beak • Feathers and wings • Eggs, with hard shells, laid on land • Constant body temperature	
Mammals	• Body covered with hair or fur • Young develop inside mother • Young feed on mother's milk • Constant body temperature	

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Marks	Remark

Use the information in the table to answer the following questions.

(a) Name **two** groups which lay eggs.

_____ and _____ [1]

(b) Name **two** groups which have a constant temperature.

_____ and _____ [1]

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(c) Give **one** characteristic shown by both fish and reptiles.

_____[1]

(d) Give **one** characteristic found only in mammals.

_____[1]

(e) Give **one difference** between amphibians and reptiles.

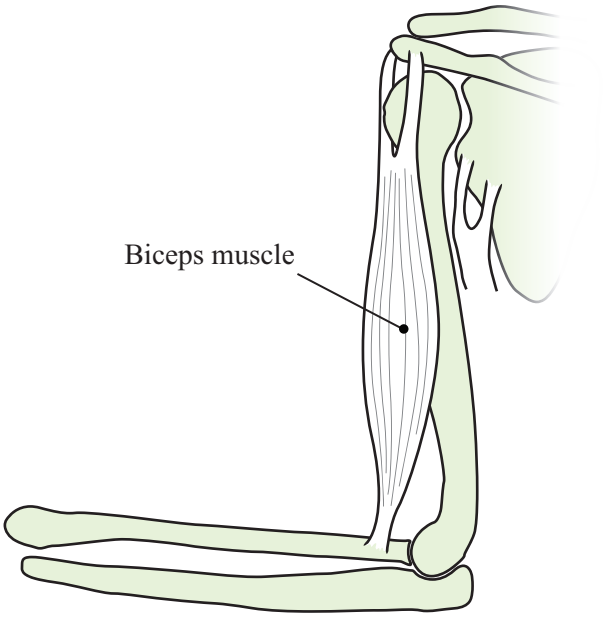
_____[1]

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Marks	Remark

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Examiner Only	
Marks	Remark

6 The diagram shows the elbow joint, when the arm is bent.



(a) Name this type of joint.

_____ [1]

(b) **Complete the diagram** to show the position of the **triceps** muscle. [2]

(c) Describe what happens to the biceps and triceps when the arm **straightens**.

Biceps _____ [1]

Triceps _____ [1]

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7 **(a)** Complete the table.

Type of variation	Human characteristic	Cause of the variation
Continuous		Environmental
	Tongue rolling	

[3]

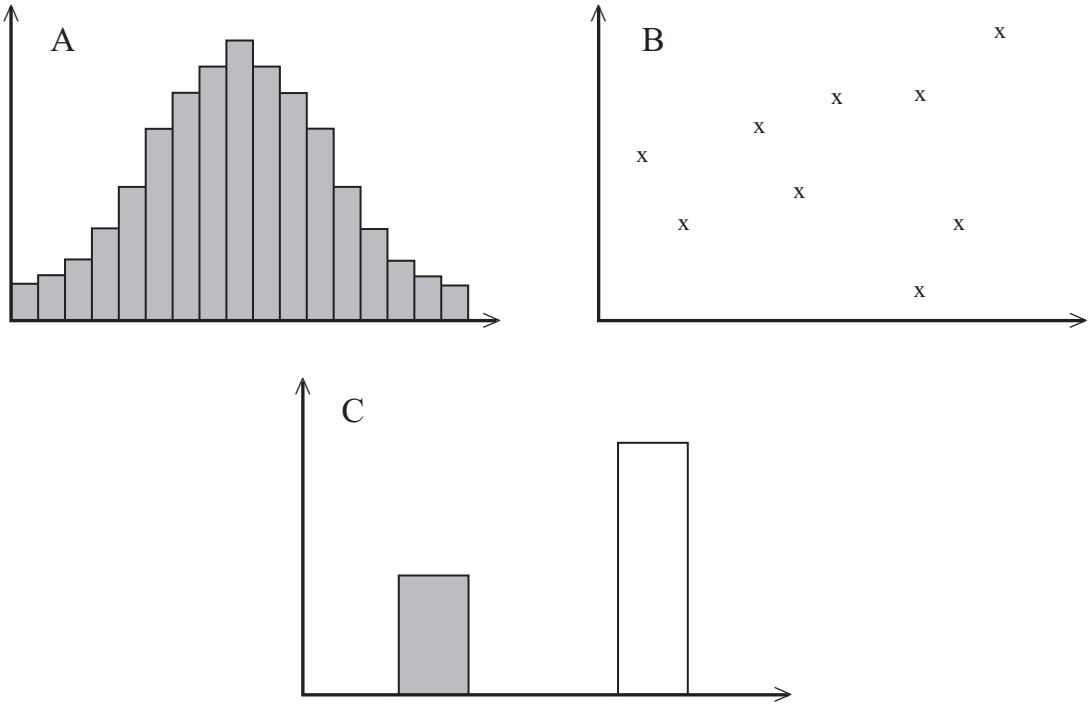
(b) Explain what is meant by continuous variation.

_____

_____

_____ [1]

The diagram shows graphs drawn from data collected during biology experiments.



(c) Which is the graph for

height? _____ [1]

tongue rolling? _____ [1]

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Marks	Remark

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8 The risk of skin cancer can be reduced.

Examiner Only	
Marks	Remark

(a) What is cancer?

_____ [1]

(b) What is formed by cancer cells?

_____ [1]

(c) What is the main cause of skin cancer?

_____ [1]

(d) Give **two** precautions which would help reduce the risk of skin cancer.

_____

_____

_____ [2]

(e) Give **one** difference between malignant and benign cancer.

_____

_____ [1]

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9 **(a)** Complete the table of changes which happen during puberty.

Change during puberty	Boys	Girls	
Growth spurt			[1]
	Yes	No	[1]
Menstruation			[1]

(b) Name the hormone which causes these changes in girls and describe where it is produced.

_____

_____

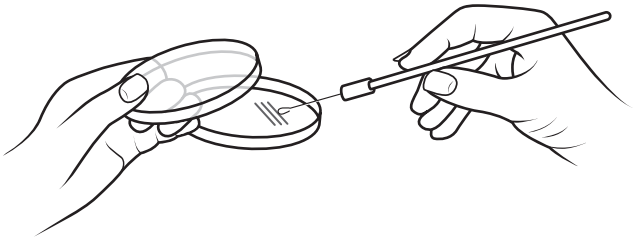
_____ [2]

Examiner Only

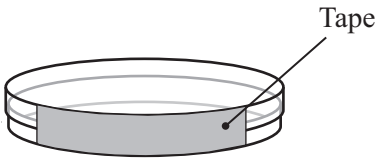
Marks	Remark

10 The diagram shows a method used to investigate microorganisms.

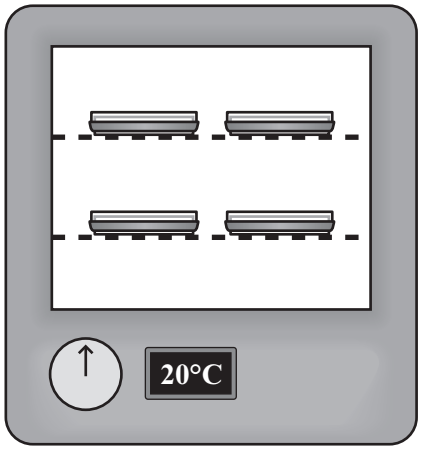
Examiner Only	
Marks	Remark



Streak the sample of microorganism on to a sterile agar plate



Seal the plate with tape



Incubate at 20 °C

Adapted from: C. J. Clegg, Microbes in Action

(a) Name **two** groups of microorganisms.

1. _____ [1]

2. _____ [1]

(b) Use the diagram and your knowledge to describe **two** ways unwanted microorganisms can be prevented from entering the agar plate while streaking the sample.

_____

_____

_____ [2]

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(c) Explain why the agar plate is sealed with tape.

_____

_____[1]

(d) Why is the agar plate incubated at 20 °C and not at 37 °C?

_____[1]

Examiner Only	
Marks	Remark

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Examiner Only	
Marks	Remark

11 Carbohydrates contain the element carbon.

(a) (i) Name the **other two** elements found in carbohydrates.

_____ and _____ [2]

(ii) Name the carbohydrate

found in fibre. _____ [1]

used in respiration. _____ [1]

A 50 g serving of pasta contains 756 kJ of energy.

(b) (i) Calculate the energy content of 100 g of pasta.

_____ kJ [1]

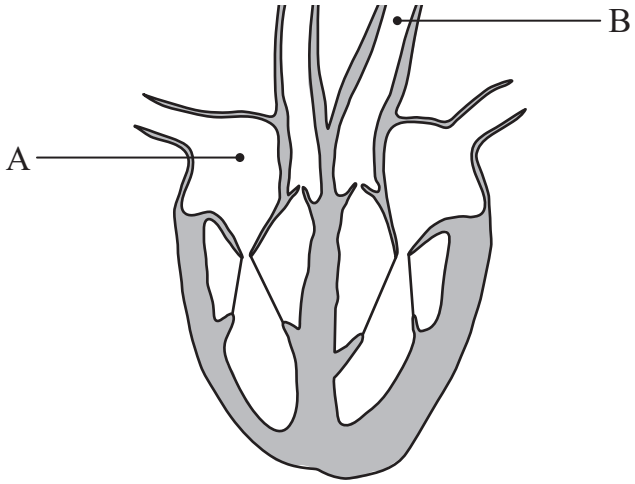
(ii) Suggest which of the foods below would provide most energy.

Potatoes **Butter** **Cabbage**

_____ [1]

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12 The diagram shows a human heart.



(a) Name parts A and B.

A _____ [1]

B _____ [1]

(b) Explain why the wall of the left ventricle is thicker than the right.

_____

_____

_____ [2]

(c) Describe **two** factors which can contribute to heart disease.

_____

_____

_____ [2]

Examiner Only

Marks	Remark

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Examiner Only	
Marks	Remark

13 **(a)** Name **one** substance, produced by burning fossil fuels,

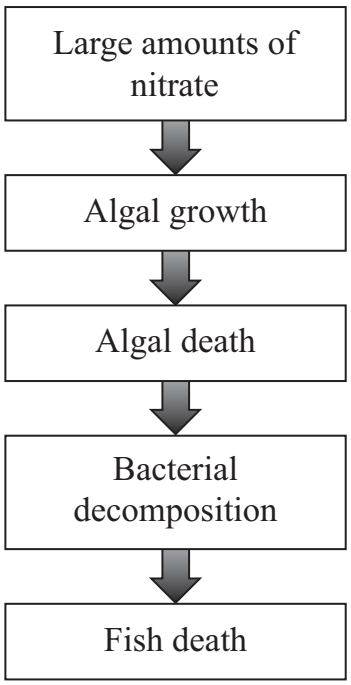
which causes acid rain.

_____ [1]

which blackens leaves and reduces photosynthesis.

_____ [1]

The flowchart summarises what happens when large amounts of nitrates pass into a lake.



(b) **(i)** Give **two** sources of nitrates which pass into lakes.

1. _____ [1]

2. _____ [1]

(ii) Explain how bacterial decomposition causes the death of fish.

_____

_____

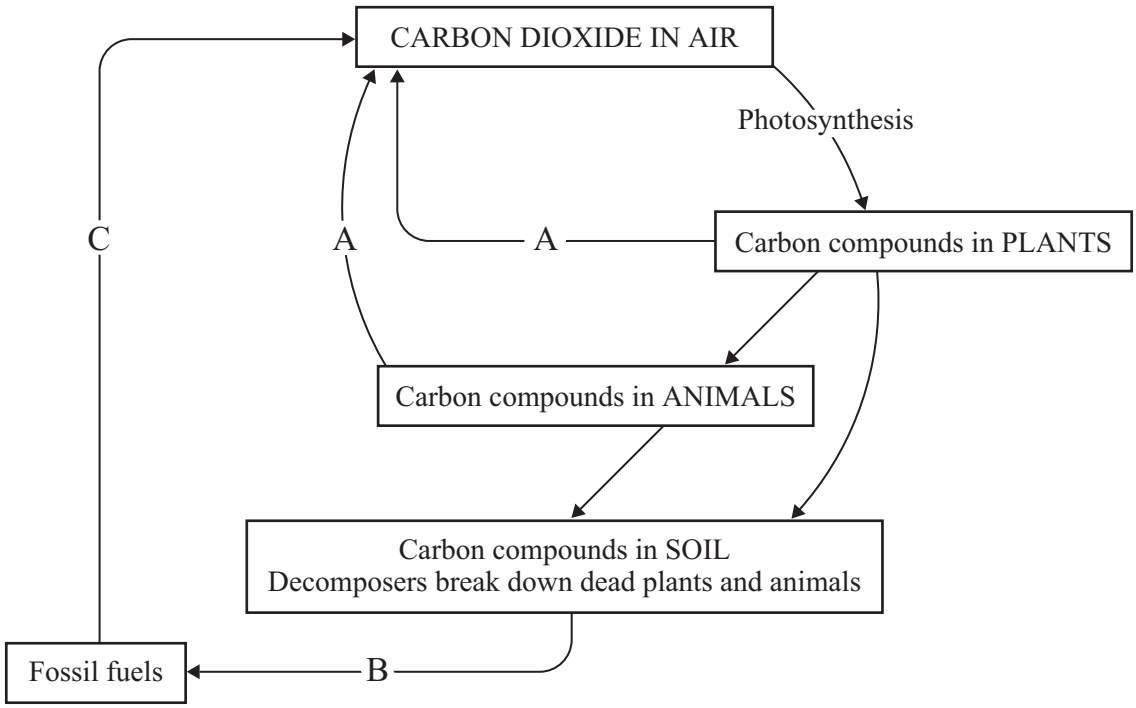
_____ [2]

(iii) Name the process summarised in the flowchart.

_____ [1]

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14 The diagram shows part of the carbon cycle.



(a) Name the processes A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

(b) Use the diagram to describe how carbon, from the air, is passed through a food chain and back into the air by decomposers.
Quality of written communication will be assessed in this question.

_____

_____

_____

_____

_____

_____ [3]

Quality of written communication [2]

Examiner Only

Marks	Remark

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THIS IS THE END OF THE QUESTION PAPER

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1847-074-1

GCSE

Science: Biology

Summer 2010

Mark Schemes

Issued: October 2010

Rewarding Learning

General Certificate of Secondary Education
2010

Science: Biology

Paper 1
Foundation Tier

[G0901]

FRIDAY 21 MAY, MORNING

MARK SCHEME

STEMUP.CO.UK

				AVAILABLE MARKS
1	**(a)**	**A** – Ovary; **B** – Vagina;	[1] [1]	
	(b)	**X** in either oviduct;	[1]	
	(c)	**Nucleus** of sperm and ovum; Fuse;	[1] [1]	5
2	**(a)**	Lung cancer; Addiction/irregular heart rate;	[1] [1]	
	(b)	Binds permanently with haemoglobin/red blood cell; Reduces/stops transport of oxygen/causes death;	[1] [1]	
	(c)	Inhaling smoke from another person;	[1]	5
3	**(a)**	A – Kidney; B – Ureter;	[1] [1]	
	(b)	Bladder labelled correctly;	[1]	
	(c)	Storage; Of urine;	[1] [1]	5
4	**(a)**	Oxygen;	[1]	
	(b)	Respiration;	[1]	
	(c)	Stoma/stomata;	[1]	
	(d)	**(i)** Hydrogencarbonate indicator/limewater;	[1]	
		(ii) (Hydrogencarbonate) Yellow/(Limewater) cloudy/milky;	[1]	5
5	**(a)**	Any **two** from: Fish; Amphibians; Reptiles; Birds;	[1]	
	(b)	Birds and Mammals;	[1]	
	(c)	Scales;	[1]	
	(d)	Young develop inside mother/young feed on mother's milk/ body covered with hair or fur;	[1]	
	(e)	Amphibians: smooth moist skin/eggs laid in water; Reptiles: skin covered with dry scales/eggs laid on land;	[1]	5

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				AVAILABLE MARKS
6	**(a)**	Hinge/synovial;	[1]	
	(b)	Triceps drawn **attached** to tendons at shoulder;	[1]	
		Attached to lower arm bone;	[1]	
	(c)	Biceps – relaxes;	[1]	
		Triceps – contracts;	[1]	5
7	**(a)**	Height/weight/mass/suitable example;	[1]	
		Discontinuous/discrete;	[1]	
		Genetic/genes;	[1]	
	(b)	Full range of results/intermediates;	[1]	
	(c)	Height – A;	[1]	
		Tongue rolling – C;	[1]	6
8	**(a)**	Uncontrolled/abnormal cell division;	[1]	
	(b)	Tumour;	[1]	
	(c)	**UV** light;	[1]	
	(d)	Any **two** from: Use high factor sun lotion; Wear a hat/long-sleeved shirt/clothing/cover up; Stay indoors/out of sun during middle (hottest/warmest part) of the day; Regularly check skin/moles;	[2]	
	(e)	Malignant spreads, benign doesn't/stays in one place;	[1]	6

9 **(a)**

Change during puberty	**Boys**	**Girls**	
Growth spurt	**Yes**	**Yes**	[1]
Voice deepens/Growth of facial hair/ growth of testes/growth of penis/ broadening of shoulders	Yes	No	[1]
Menstruation	**No**	**Yes**	[1]

	(b)	Oestrogen; Produced in the ovary;	[2]	5

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				AVAILABLE MARKS
10	**(a)**	Any **two** from: Bacteria; Virus; Fungus;	[2]	
	(b)	Any **two** from: Use sterile water/agar/wash hands; Flamed wire loop; Lid of Petri dish not completely removed; Work beside Bunsen flame/swab bench;	[2]	
	(c)	Prevent dangerous/pathogenic microorganisms from **entering/leaving** the dish;	[1]	
	(d)	Prevent growth of **pathogenic/harmful** microorganisms;	[1]	6
11	**(a)**	**(i)** Hydrogen; Oxygen;	[2]	
		(ii) Cellulose; Glucose/sugar;	[1] [1]	
	(b)	**(i)** 1512;	[1]	
		(ii) Butter;	[1]	6
12	**(a)**	A – **Right** atrium; B – Aorta;	[1] [1]	
	(b)	Produce higher pressure; Pump blood greater distance/all around the body;	[1] [1]	
	(c)	Any **two** from: Lack of exercise; Obesity; Smoking/**excess** alcohol; **Excess** salt/high blood pressure; **Excess** fat/cholesterol;	[2]	6
13	**(a)**	SO_2/NOx; Soot;	[1] [1]	
	(b)	**(i)** Manure/slurry; Artificial fertilizer;	[1] [1]	
		(ii) Uses up oxygen; aerobic; Fish cannot respire;	[1] [1]	
		(iii) Eutrophication;	[1]	7

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				AVAILABLE MARKS
14	**(a)**	A – Respiration;	[1]	
		B – Fossilisation;	[1]	
		C – Combustion/burning;	[1]	
	(b)	Any **three** from: Carbon in CO_2 assimilated/fixed/taken into plants; Photosynthesis; Plants eaten/consumed by animals; Plants/animals die/Animals excrete urine/produce faeces; Microorganisms/bacteria/fungi **respire**; Producing/releasing CO_2 (into the atmosphere);	[3]	
		QWC;	[2]	8
			Total	**80**

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Rewarding Learning

Centre Number	
71	

Candidate Number

General Certificate of Secondary Education
2009

Science: Biology

Paper 1
Foundation Tier

[G0901]

G0901

WEDNESDAY 20 MAY, AFTERNOON

TIME

1 hour

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all fourteen** questions.

INFORMATION FOR CANDIDATES

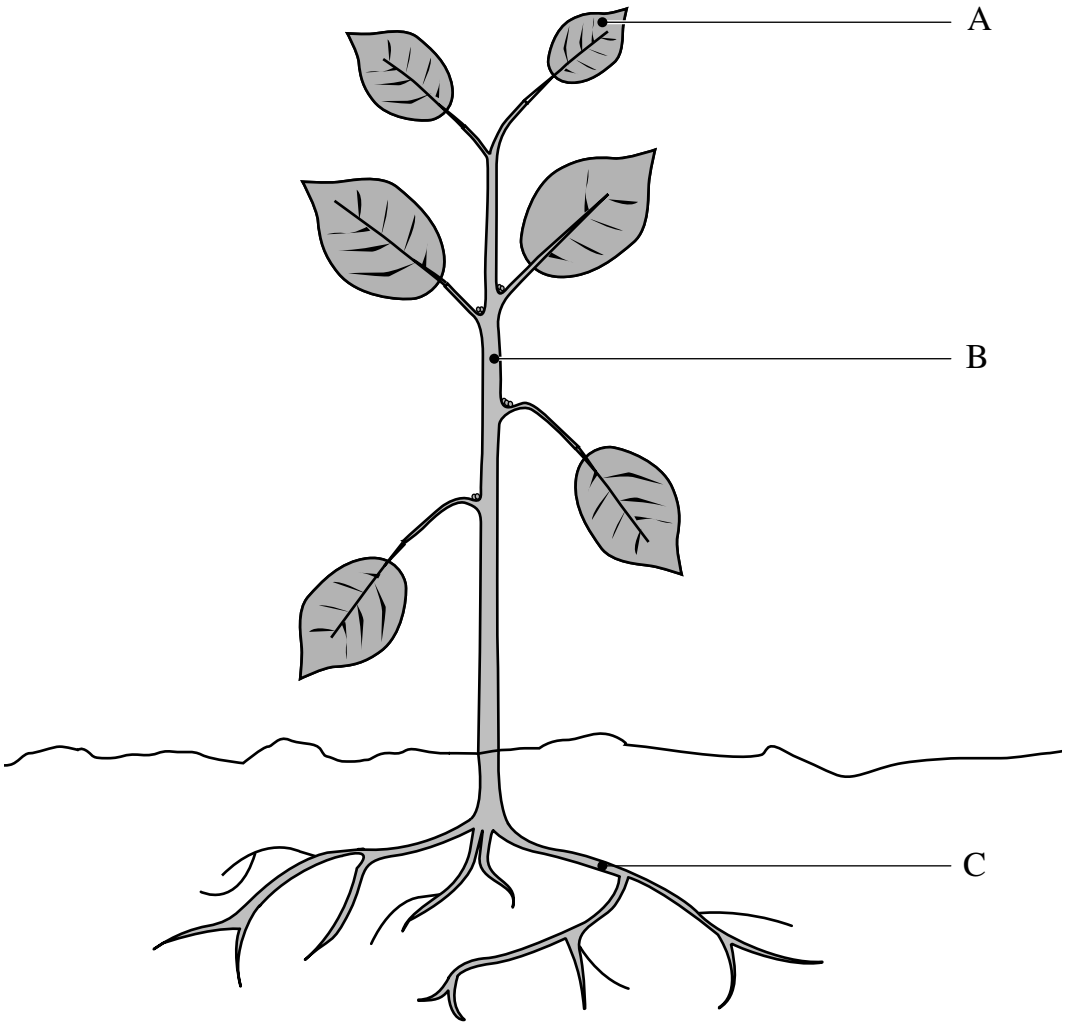
The total mark for this paper is 80.
Quality of written communication will be assessed in question **14(d)**
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
Total Marks	

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Marks	Remark

1 The diagram shows a plant.



(a) Name the plant organs A and B.

A _____ [1]

B _____ [1]

(b) Give **two** functions of C.

_____

_____

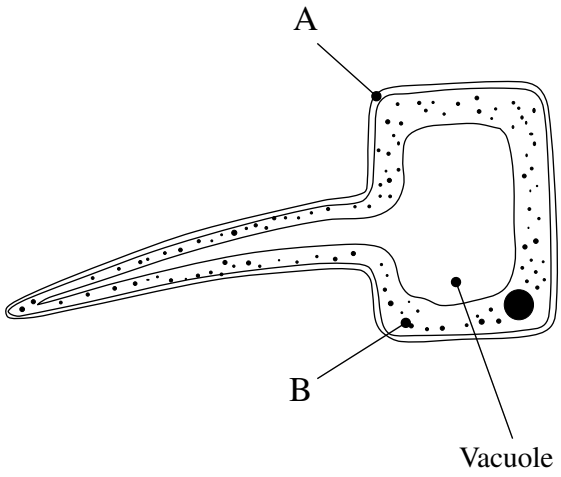
_____ [2]

(c) Name **one other** organ of a plant not shown in the diagram.

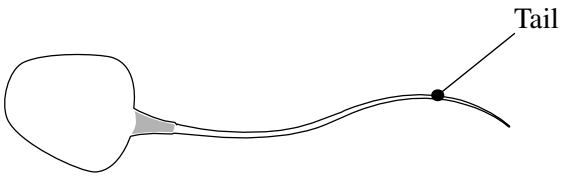
_____ [1]

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2 The diagrams show two specialised cells.



Plant cell



Animal cell

Examiner Only	
Marks	Remark

(a) Name parts A and B.

A _____ [1]

B _____ [1]

(b) Give the function of the tail on this animal cell.

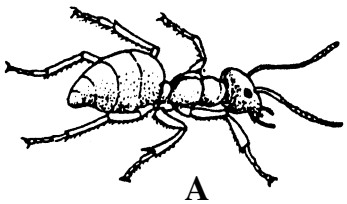
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_____ [1]

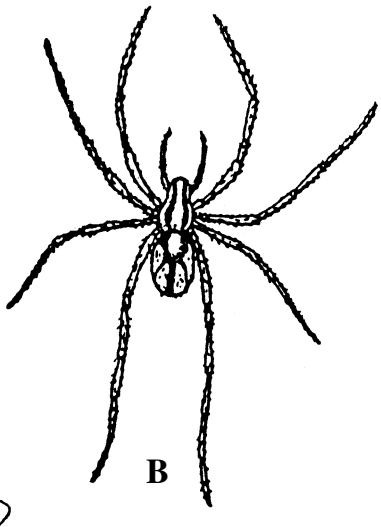
(c) On the animal cell **draw** and **label** the nucleus. [2]

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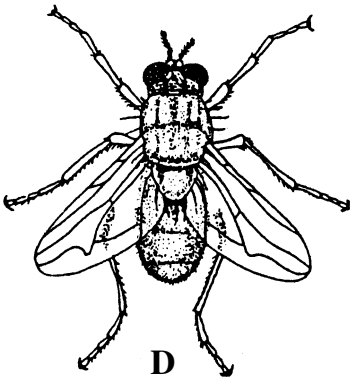
3 The diagrams show four animals.



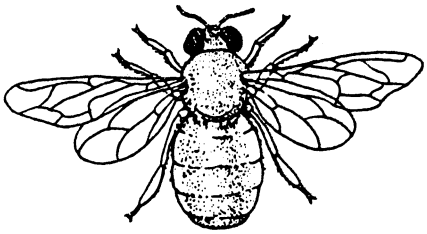
A



B



D



C

Examiner Only	
Marks	Remark

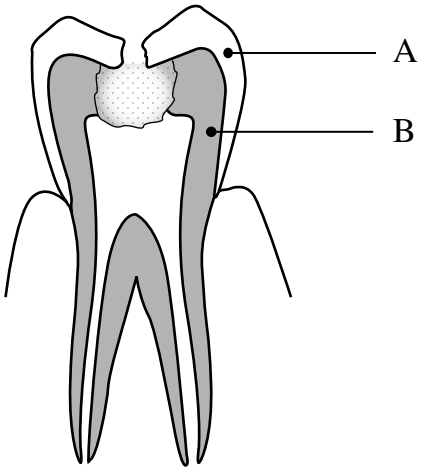
(a) Use the key to identify the animals and place the correct letter in each box.

1.	Wings present	go to 2		
	No wings	go to 3		
2.	Two wings	*Musca*	☐	[1]
	Four wings	*Bombus*	☐	[1]
3.	Six legs	*Formica*	☐	[1]
	Eight legs	*Pisaura*	☐	[1]

(b) Name the group to which animals **A**, **C** and **D** belong.

_____ [1]

4 The diagram shows tooth decay.



Source: G. Jones, M Jones, BIOLOGY GCSE edition, Cambridge University Press, 1987

(a) Name parts A and B.

A _____ [1]

B _____ [1]

When sugary foods collect around teeth plaque may form.

(b) Name the type of microorganism which is found in plaque.

_____ [1]

(c) Explain how the microorganisms in plaque cause tooth decay.

_____

_____

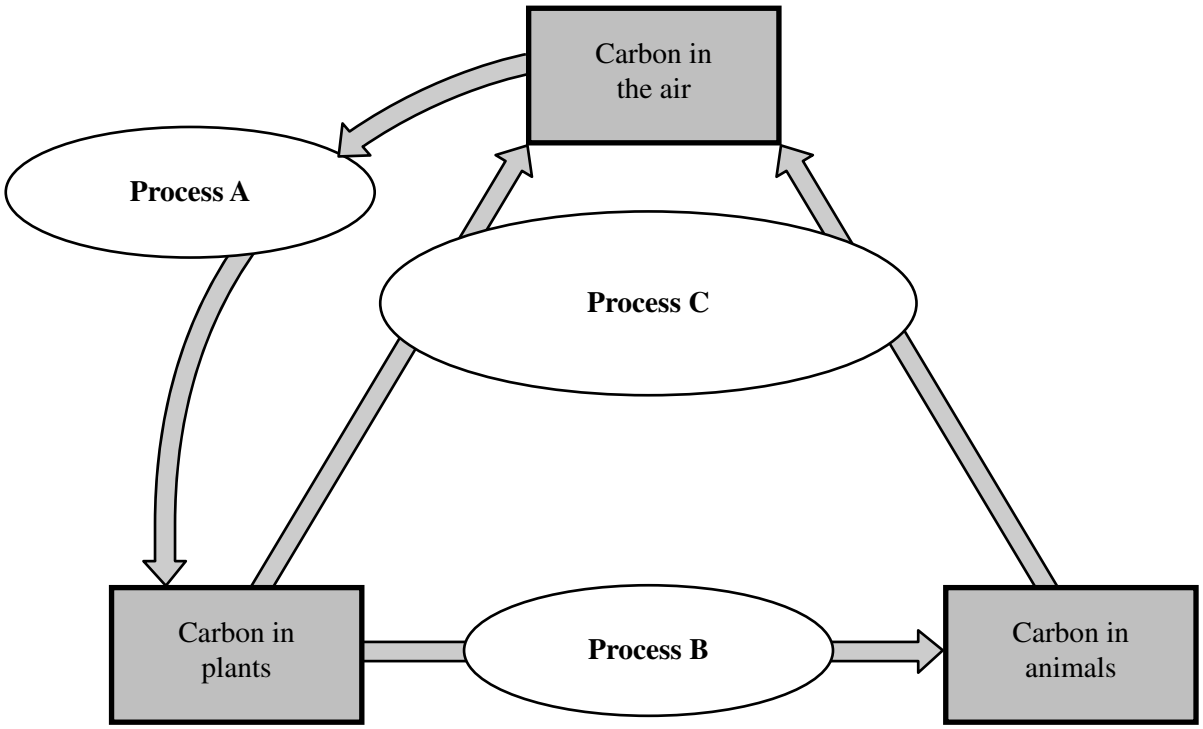
_____ [2]

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Marks	Remark

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5 The diagram shows part of the carbon cycle.



Examiner Only	
Marks	Remark

Choose words from the list to help answer the following questions.

burning **photosynthesis** **respiration**

fossilisation **feeding**

(a) Name processes A and B.

A _____ [1]

B _____ [1]

(b) Explain how process C increases the amount of carbon in the air.

_____

_____

_____ [2]

(c) Name **one** food molecule, produced by plants, which contains carbon.

_____ [1]

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6 The table shows some characteristics of 25 pupils in a class.

Characteristic	Variations	Number of pupils
Tongue rolling	Yes	19
	No	6
Scars	Present	5
	Absent	20
Hair length	Short	13
	Shoulder length	8
	Long	

(a) Calculate the number of pupils in the class who had long hair.
Show your working.

_____ [2]

(b) Some characteristics are controlled by genes.

(i) What is a gene?

_____

_____ [1]

(ii) Suggest **one** characteristic from the table which is normally controlled by

genes. _____

the environment. _____ [2]

Examiner Only

Marks	Remark

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7 **(a)** Complete the table.

Method to prevent food spoilage	Treatment	Example of food treated this way
	Food kept at –18 °C	Ice cream
Refrigeration		
	Heated to high temperature and cooled quickly	Milk

[4]

(b) Describe how drying preserves food.

_____

_____

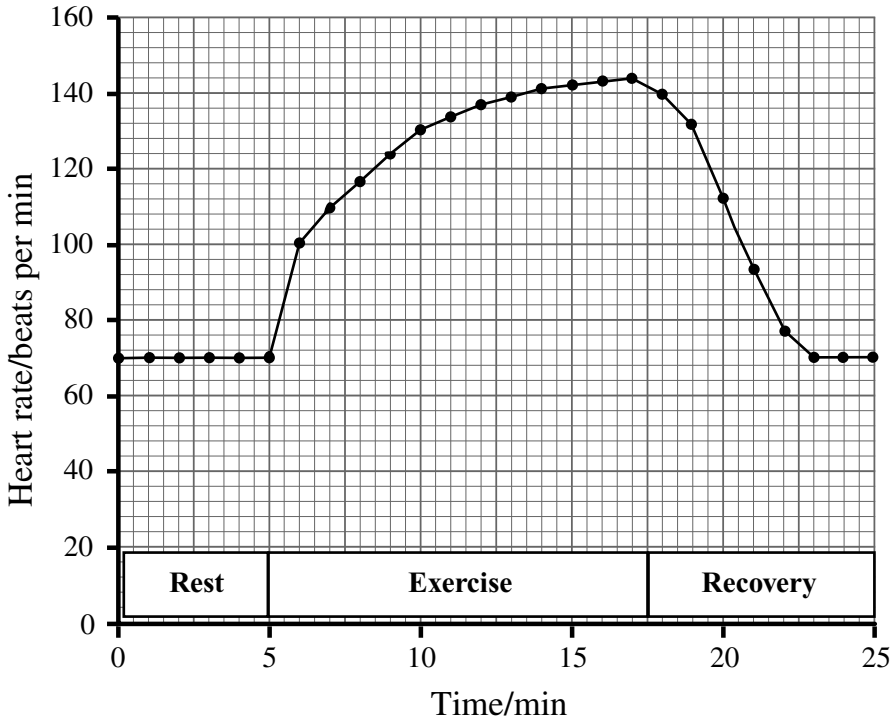
_____ [2]

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Marks	Remark

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8 The graph shows the effect of exercise on heart rate.



© Biology for AQA by Anne Fullick published by Heinemann Education, 2001, ISBN 0435583549, reprinted by Pearson Education Ltd, publishers.

Use the graph to answer the following questions.

(a) What is the heart rate at rest?

_____ beats per minute [1]

(b) Describe what happens to the heart rate during exercise.

_____ [1]

(c) Explain why the heart rate changes during exercise.

_____

_____

_____ [2]

(d) Give **two** other changes to the body during exercise.

1. _____ [1]

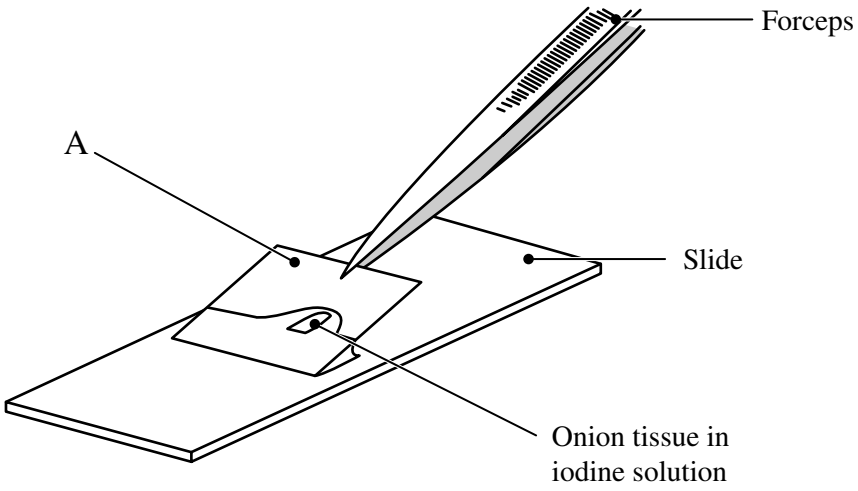
2. _____ [1]

Examiner Only

Marks	Remark

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9 The diagram shows a microscope slide being prepared.



Source: D. G. Mackean, Life Study: A Textbook of Biology, John Murray (Publishers) Ltd., 1981

Examiner Only	
Marks	Remark

(a) Name A.

_____ [1]

(b) Describe how the forceps are used when preparing a slide.

_____

_____ [1]

(c) Explain why the onion tissue is placed in iodine solution.

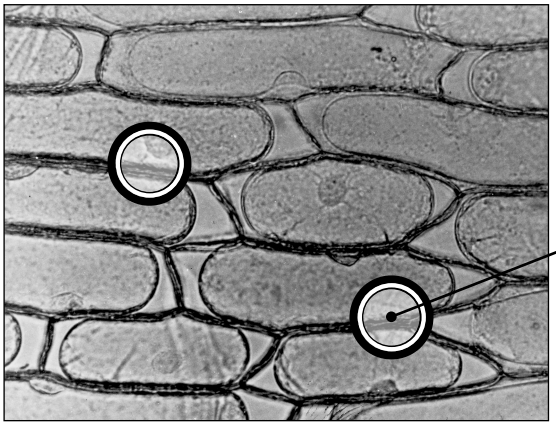
_____

_____

_____ [2]

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The drawing shows the appearance of a prepared slide.



(d) What causes the ring shapes?

_____

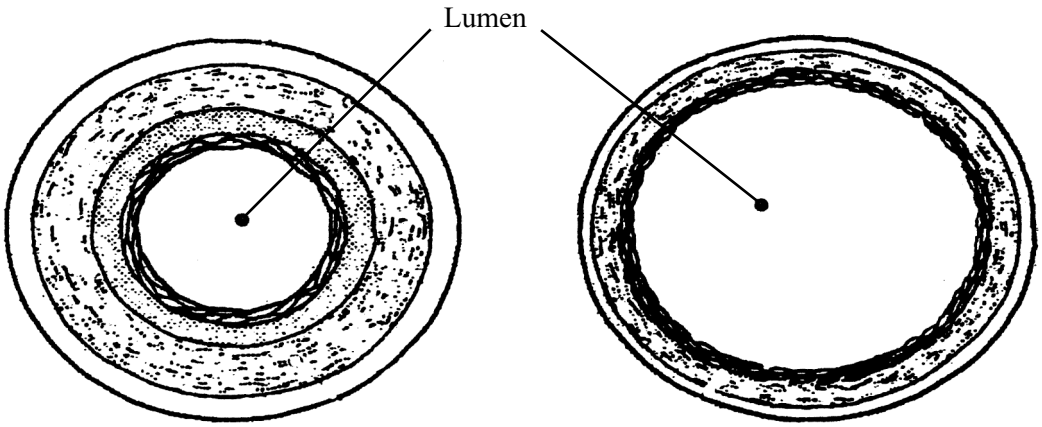
_____ [1]

Examiner Only

Marks	Remark

10 The diagram shows an artery and a vein.

Examiner Only	
Marks	Remark



Artery Vein

Source: Human Biology: An Activity Approach, P. Rowlinson, M. Jenkins, Cambridge University Press, 1982

(a) Give **two** ways the structure of an artery differs from a vein.

1. _____ [1]

2. _____ [1]

(b) Describe how the composition of blood in an artery differs from that in a vein.

_____

_____

_____ [2]

(c) Name the artery which takes blood to the

kidney. _____ [1]

lung. _____ [1]

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11 Thumb shape is controlled by a gene.

The dominant allele, **T**, results in a normal thumb shape.

The recessive allele, **t**, causes the thumb to be slightly bent to form hitch-hiker's thumb.

Normal thumb



Hitch-hiker's thumb



(a) Give the phenotype of someone whose genotype is **TT**.

_____ [1]

(b) Complete the Punnett square to show the possible offspring of a cross between a person with a normal thumb and one with a hitch-hiker's thumb.

		Hitch-hiker's thumb	
	Types of gamete		
Normal thumb	**T**		
	t		

[3]

(c) What portion of the offspring

would be expected to have hitch-hiker's thumb?

_____ [1]

are heterozygous?

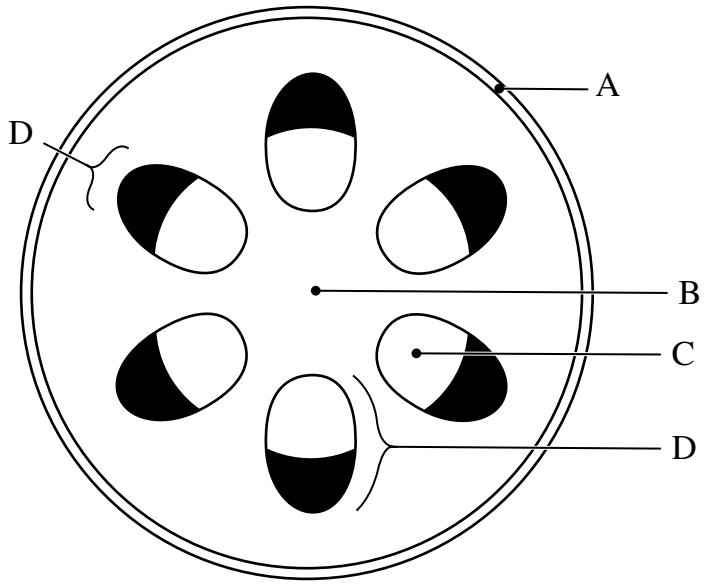
_____ [1]

Examiner Only

Marks	Remark

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12 The diagram shows a cross section of a stem.



(a) Name parts A, B, C and D.

A _____ [1]

B _____ [1]

C _____ [1]

D _____ [1]

(b) Describe the function of the phloem.

_____

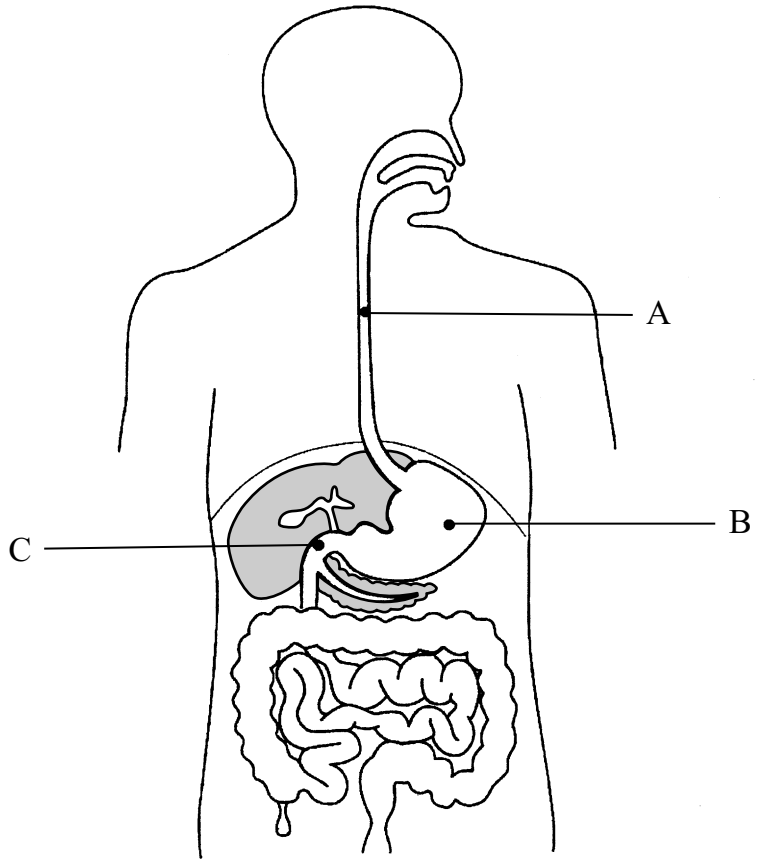
_____ [2]

Examiner Only

Marks	Remark

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13 The diagram shows the human digestive system.



Source: R. McIlwaine, J Napier, GCSE BIOLOGY for CCEA, Hodder & Stoughton Educational, 2003

(a) **On the diagram** draw a line

labelled X to show where ingestion takes place. [1]

labelled Y to show where water is absorbed. [1]

(b) Name parts A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

(c) Explain why digestion is necessary.

_____

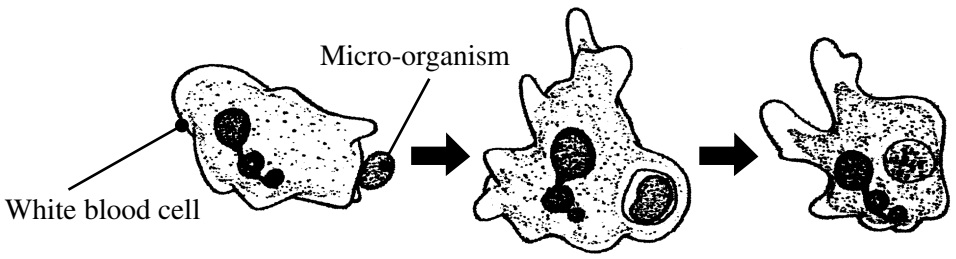
_____

_____ [2]

Examiner Only	
Marks	Remark

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14 The diagram shows one way white blood cells destroy bacteria.



Stage 1 **Stage 2** **Stage 3**

Source: G. Jones, M Jones, BIOLOGY GCSE edition, Cambridge University Press, 1987

(a) Name the process shown in the diagram.

_____ [1]

(b) Explain how the bacteria are destroyed.

_____ [1]

(c) Give **one** other way white blood cells fight infection.

_____ [1]

Vaccination is another way of fighting infection.

(d) Describe how Jenner developed a vaccine for smallpox.

_____

_____

_____

_____

_____

_____

_____

_____ [3]

Quality of written communication [2]

Examiner Only

Marks	Remark

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Science: Biology

Summer 2009

Mark Schemes

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Rewarding Learning

General Certificate of Secondary Education
2009

Science: Biology

Paper 1
Foundation Tier

[G0901]

WEDNESDAY 20 MAY, AFTERNOON

MARK SCHEME

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				AVAILABLE MARKS
1	**(a)**	A – Leaf; B – Stem;	[1] [1]	
	(b)	Any **two** from: Anchorage; absorption/uptake of water; absorption/uptake of minerals;	[2]	
	(c)	Flower;	[1]	5
2	**(a)**	A – cell wall; B – cytoplasm;	[1] [1]	
	(b)	Swim;	[1]	
	(c)	Nucleus drawn inside sperm head; at least half the size of the head;	[2]	5
3	**(a)**	D; C; A; B; (4 × [1])	[4]	
	(b)	Arthropod/insect;	[1]	5
4	**(a)**	A – Enamel; B – Dentine;	[1] [1]	
	(b)	Bacteria;	[1]	
	(c)	Any **two** from: Bacteria feed on sugars; Produce acids; Which decay/eats/erodes/ breaks down;	[2]	5
5	**(a)**	A – photosynthesis B – feeding	[1] [1]	
	(b)	Respiration/combustion/burning; produces carbon dioxide;	[2]	
	(c)	Carbohydrate (named)/fat/protein;	[1]	5
6	**(a)**	13 + 8 = 21; 25 – 21 = 4;	[2]	
	(b)	**(i)** Length of DNA/inherited material/part of a chromosome which codes for **one** characteristic;	[1]	
		(ii) Tongue rolling; Scars/hair length;	[2]	5

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				AVAILABLE MARKS
7	**(a)**	Freezer/frozen; Food kept at 2–5 °C; Any reasonable answer; Pasteurization; (4 × [1])	[4]	
	(b)	Water removed; no bacterial growth;	[2]	6
8	**(a)**	70;	[1]	
	(b)	Increases;	[1]	
	(c)	Any **two** from: Blood to muscles; oxygen/sugar (to muscles); to remove carbon dioxide (from muscles);	[2]	
	(d)	Any **two** from: sweating; hotter/flushed; increased breathing; spending calories/ decreased bosy mass;	[2]	6
9	**(a)**	Coverslip/coverglass;	[1]	
	(b)	Place/**lower** (coverslip/A) **on to the slide/over tissue**;	[1]	
	(c)	Colour/stain the cells; Make the cells/parts of cells more clearly/easily seen;	[1] [1]	
	(d)	Air/bubbles (trapped under the coverslip/coverglass);	[1]	5
10	**(a)**	Artery – smaller lumen; thicker wall; no valves; (Any **two**)	[2]	
	(b)	Artery more oxygen/glucose/amino acids; vein more carbon dioxide/urea;	[2]	
	(c)	Renal artery; pulmonary artery; (2 × [1])	[2]	6
11	**(a)**	Normal thumb	[1]	
	(b)	t t; Tt Tt; tt tt;	[1] [1] [1]	
	(c)	Half/50%; (**Not** 1:1) Half/50%; (**Not** 1:1)	[1] [1]	6

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				AVAILABLE MARKS
12	**(a)**	A – epidermis; B – pith; C – xylem; D – vascular bundle; (4 × [1])	[4]	
	(b)	Carries food/sugars/products of photosynthesis; from leaves around plant;	[2]	6
13	**(a)**	Labelled **line X** to mouth; Labelled line to large intestine/colon;	[1] [1]	
	(b)	A – Oesophagus; B – Stomach; C – Duodenum;	[1] [1] [1]	
	(c)	Any **two** from: Break down food/molecules/insoluble; to small/simple/soluble; which can be **absorbed** by blood;	[2]	7
14	**(a)**	Phagocytosis;	[1]	
	(b)	Engulfs/digests;	[1]	
	(c)	Produce antibodies;	[1]	
	(d)	Noticed milkmaids with cowpox did not get smallpox; Injected/infected boy with cowpox; Boy given smallpox and recovered;	[3]	
		Quality of written communication	[2]	8
			Total	**80**

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