

**EXAMINATIONS COUNCIL OF ZAMBIA**

**Examination for General Certificate of Education Ordinary Level**

**Biology**

**Paper 1 Multiple Choice**

**5090/1**

**Wednesday**

**6 JULY 2016**

Additional materials:

- 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.**

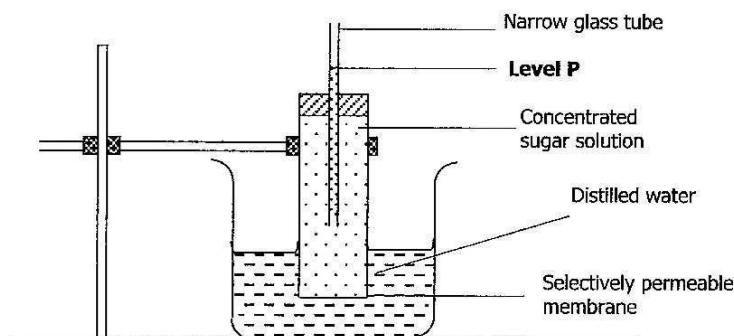
- 1** Which characteristic of living organisms is described by the following statement?  
 "Permanent increase in size of an organism".

- A** Excretion
- B** Growth
- C** Reproduction
- D** Respiration

- 2** What are the correct functions of the following specialised cells?

	<b>Root hair cell</b>	<b>Phloem cells</b>	<b>Xylem cells</b>
<b>A</b>	Absorption of water	Conduction of sucrose	Conduction of water
<b>B</b>	Absorption of water	Conduction of water	Conduction of sucrose
<b>C</b>	Conduction of water	Conduction of sucrose	Absorption of water
<b>D</b>	Conduction of water	Absorption of water	Conduction of sucrose

- 3** The diagram shows an apparatus used to investigate osmosis.



What molecules will pass through the selectively permeable membrane and what will happen to level P?

	<b>Molecules that pass through selectively permeable membrane</b>	<b>Level P</b>
<b>A</b>	Sugar	Fall
<b>B</b>	Sugar	Rise
<b>C</b>	Water	Fall
<b>D</b>	Water	Rise

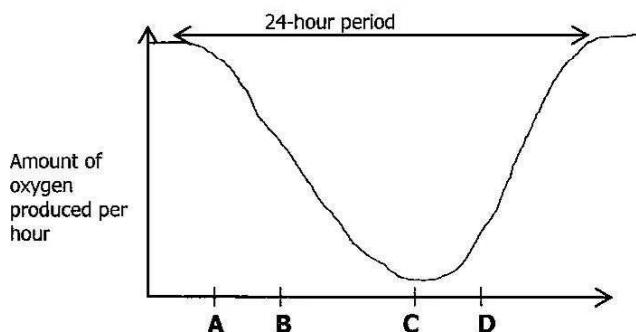
- 4** In the phylum arthropoda, which of the following characteristics correctly identifies the class insecta?

	Number of main body parts	Pairs of legs	Pairs of wings
<b>A</b>	2	3	2
<b>B</b>	3	2	4
<b>C</b>	3	3	2
<b>D</b>	4	6	4

- 5** Which of the following signs indicate that a plant is lacking magnesium?

- A** Purple leaves and thin stem.
- B** Small leaves and thin stem.
- C** White upper leaves and normal leaves.
- D** Yellow leaves and yellow stems.

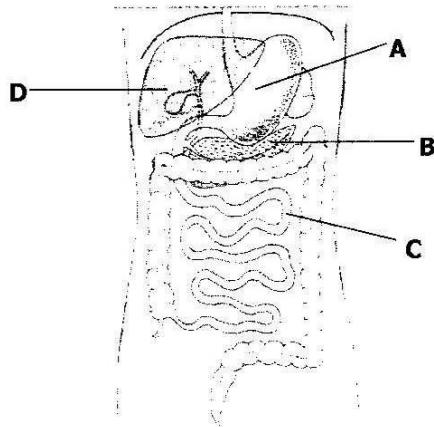
- 6** The diagram shows the amount of oxygen produced by a green plant, growing outdoors, during a 24-hour period. Which letter represents midday?



- 7** Which substances are needed for formation of healthy bones and teeth?

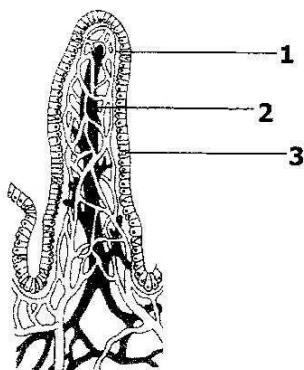
- A** Calcium and Vitamin **C**.
- B** Calcium and Vitamin **D**.
- C** Iron and Vitamin **C**.
- D** Iron and Vitamin **D**.

- 8** The diagram shows the alimentary canal.



Which labelled structure produces an acidic digestive juice?

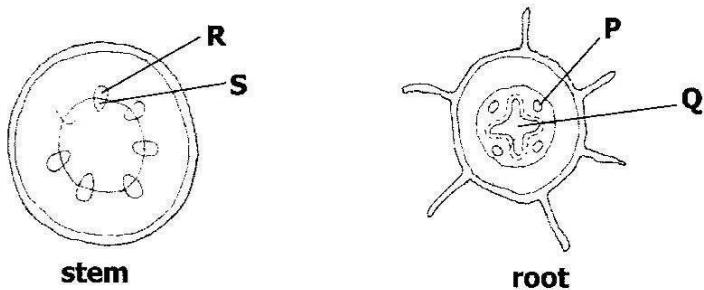
- 9** The diagram shows a villus.



Which of the following correctly describes the functions of the numbered parts?

	1	2	3
A	Absorbs digested fats	Absorbs glucose	Produces enzymes
B	Absorbs digested fats	Absorbs glucose	Produces mucus
C	Absorbs glucose	Produces digested fats	Produces enzymes
D	Absorbs glucose	Absorbs digested fats	Produces mucus

- 10** The diagrams show the transverse section of a dicot root and a dicot stem.



Which tissues carry sucrose in solution?

	Root	Stem
A	P	R
B	P	S
C	Q	R
D	Q	S

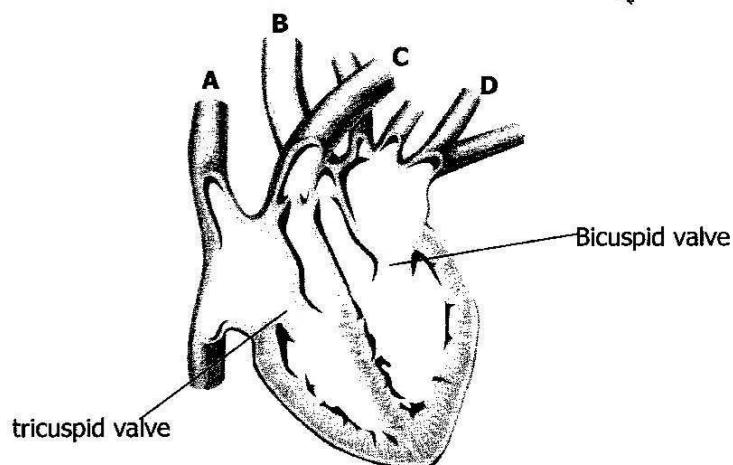
- 11** Which conditions will increase the rate of transpiration in a plant?

	Temperature	Humidity	Wind speed
<b>A</b>	High	High	High
<b>B</b>	High	Low	High
<b>C</b>	Low	High	High
<b>D</b>	Low	Low	High

- 12** A woman has fewer red blood cells than normal. What would be the effect of this?

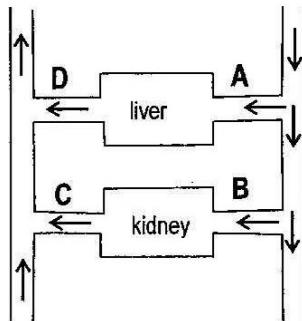
- A** Her blood contains high levels of urea.
- B** Her blood does not clot properly.
- C** Her body does not get enough oxygen.
- D** She cannot fight off infections.

- 13** The diagram shows a transverse section of the human heart.



Which labelled vessel is the vein that carries oxygenated blood?

- 14** The diagram represents the liver, Kidney and some associated blood vessels. In which blood vessel will the blood contain the lowest concentration of urea?



**15** The end products of anaerobic respiration in yeast cells are ...

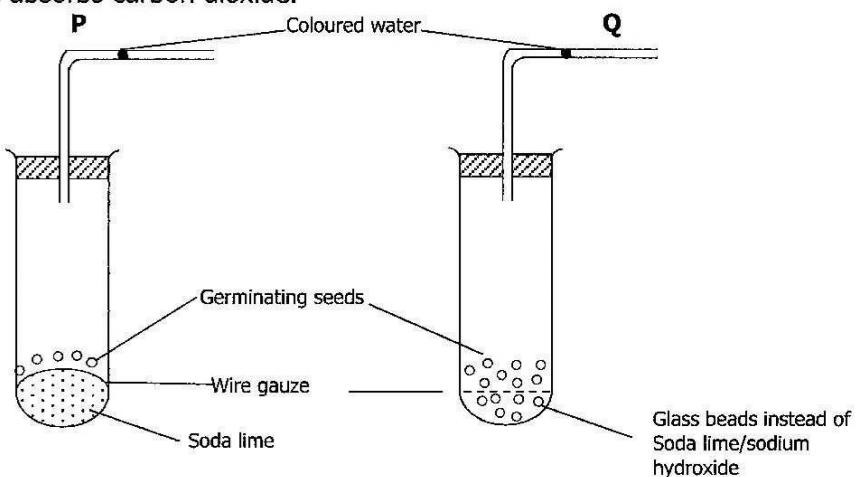
- A** carbon dioxide and ethanol.
- B** carbon dioxide and lactic acid.
- C** carbon dioxide and water.
- D** ethanol and water.

**16** What happens to the diaphragm and external intercostal muscles during inspiration?

	<b>Diaphragm</b>	<b>External intercostal muscles</b>
<b>A</b>	Contract	Contract
<b>B</b>	Contract	Relax
<b>C</b>	Relax	Contract
<b>D</b>	Relax	Relax

**17** The diagram shows an experiment to investigate respiration in germinating seeds.

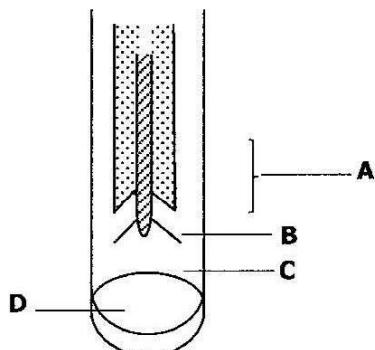
Soda lime absorbs carbon dioxide.



In which direction does the coloured water move?

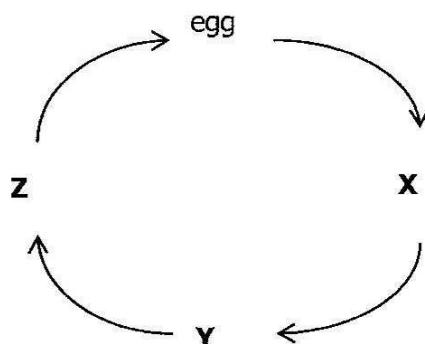
	<b>P</b>	<b>Q</b>
<b>A</b>	Left	Right
<b>B</b>	Left	Stay still
<b>C</b>	Right	Left
<b>D</b>	Stay still	Right

- 18 The diagram shows a root meristem.



Which part is the region of cell division?

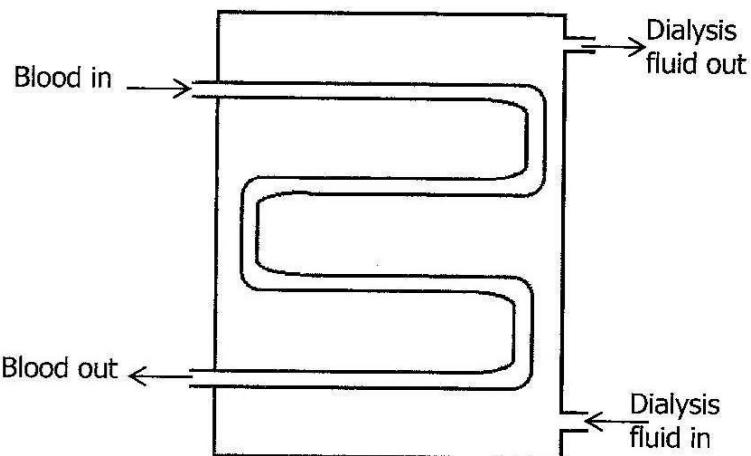
- 19 The diagram shows the life cycle of a mosquito.



What stages are X, Y and Z?

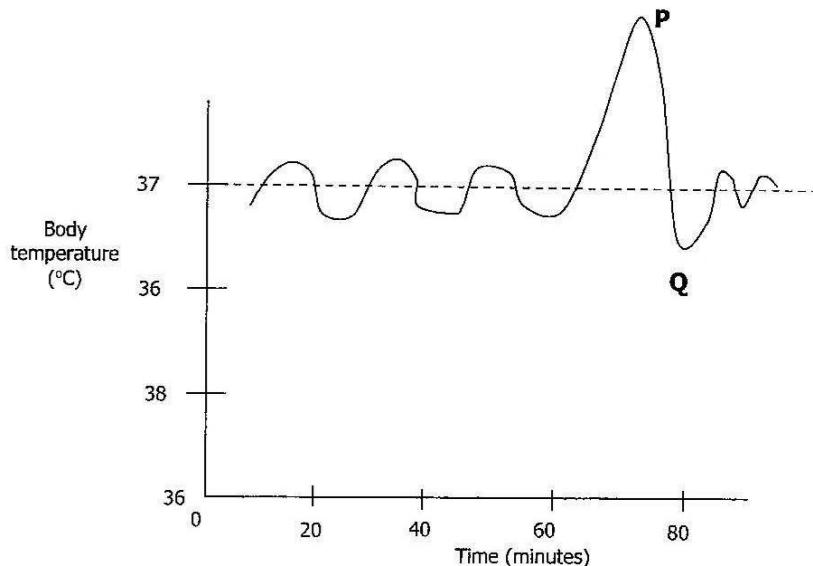
	X	Y	Z
A	Adult	Pupa	Larva
B	Adult	Larva	Pupa
C	Larva	Adult	Pupa
D	Larva	Pupa	Adult

- 20** The diagram shows part of a dialysis machine.



Which substance in the dialysis fluid should be at a lower concentration than in the blood?

- A** Amino acids and glucose.
  - B** Amino acids and urea.
  - C** Glucose and salts.
  - D** Salts and urea.
- 21** The graph shows changes in the person's body temperature plotted against time. What causes the change in temperature between **P** and **Q**?



- A** Increase in temperature.
- B** Increase in evaporation of water in sweat.
- C** Reduced blood flow through surface capillaries.
- D** Shivering.

- 22** What effect would an increase in glucagon have on the human body?

	Concentration of glycogen in the liver	Concentration of glucose in the blood
A	Decrease	Increase
B	Increase	Increase
C	No effect	Decrease
D	Increase	No effect

- 23** Which of the following correctly distinguishes a taxic response from a tropic response? The taxic response ...

- A involves hormones.
- B is a growth movement.
- C is movement of whole organism.
- D is irreversible.

- 24** Which part of the brain is responsible for osmoregulation?

- A Cerebellum
- B Cerebrum
- C Hypothalamus
- D Medulla oblongata

- 25** Which substances are depressant drugs?

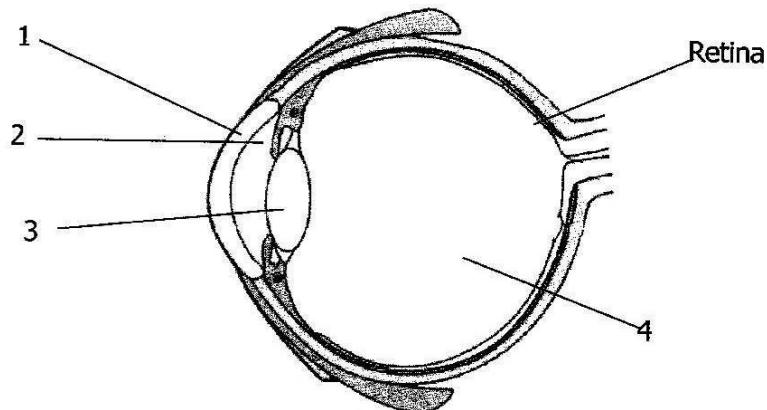
	Alcohol	Heroin	Nicotine
A	✓	✓	✓
B	✓	✓	X
C	✓	X	✓
D	X	✓	✓

**Key**

✓ depressant drug

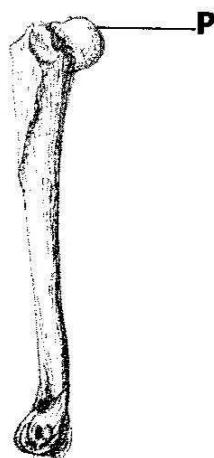
X not a depressant drug

- 26** The diagram shows a section through the eye.



Which pair of structures focus light rays onto the retina?

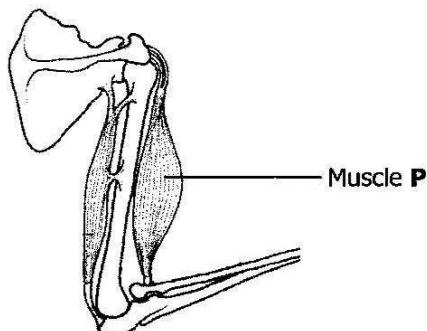
- A** 1 and 2.
  - B** 1 and 3.
  - C** 2 and 3.
  - D** 2 and 4.
- 27** The diagram shows a bone from a fore limb.



What is the name of the bone and which type of joint does it form at P?

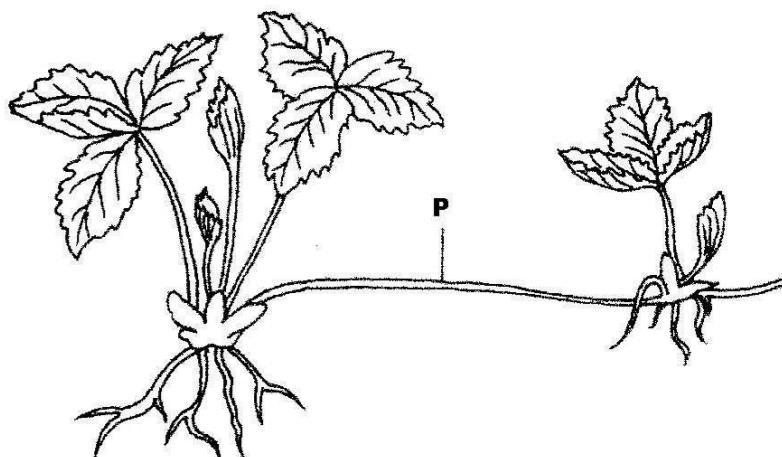
	<b>Bone</b>	<b>Joint</b>
<b>A</b>	Humerus	Hinge
<b>B</b>	Humerus	Ball and socket
<b>C</b>	Ulna	Hinge
<b>D</b>	Ulna	Ball and socket

- 28 The diagram shows the main bones and muscles of the arm.



What happens when muscle P contracts?

- A The lower arm is extended.
  - B The lower arm is raised.
  - C The upper arm is raised.
  - D The whole arm rotates.
- 29 The diagram below shows a form of asexual reproduction.



What name is given to the vegetative structure labelled P?

- A Corm
- B Rhizome
- C Runner
- D Sucker

- 30** In plant reproduction, the following processes occur:

- 1 Fertilization
- 2 Growth of a pollen tube
- 3 Pollination
- 4 Seed germination

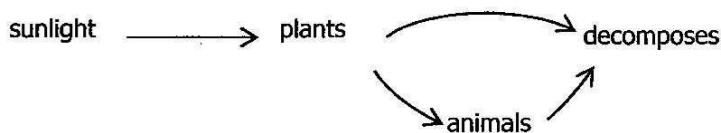
In which order do these processes occur?

- A** 1 → 4 → 2 → 3  
**B** 2 → 1 → 3 → 4  
**C** 3 → 2 → 1 → 4  
**D** 4 → 3 → 1 → 2
- 31** A woman ovulates on the 7<sup>th</sup> of January. In which week will her next menstrual period begin?

January						
Mon	Tue	Wed	Thurs	Fri	Sat	Sun
<b>A</b>	-	-	1	2	3	4
<b>B</b>	5	6	7	8	9	10
<b>C</b>	12	13	14	15	16	17
<b>D</b>	26	27	28	29	30	31

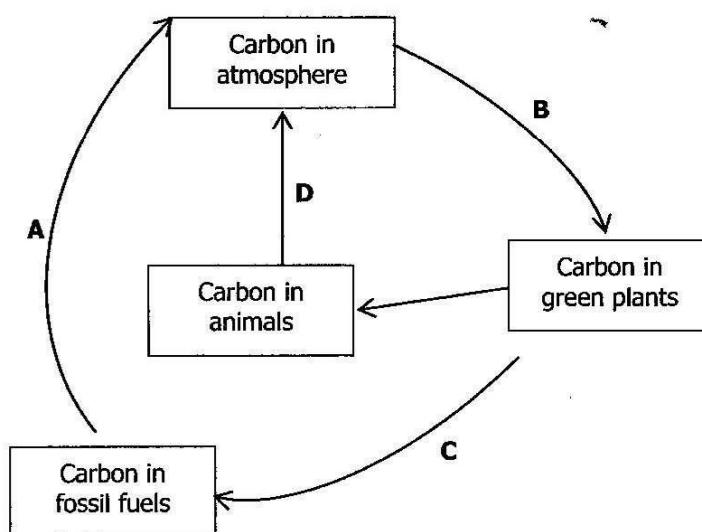
- 32** Which **one** of the following statements describes the effects of smoking on the baby in a pregnant mother?
- A** Increased growth rate and increased birth weight.  
**B** Increased growth rate and reduced birth weight.  
**C** Reduced growth rate and increased birth weight.  
**D** Reduced growth rate and reduced birth weight.
- 33** Which of the following parasites requires a fresh water snail to complete its life cycle?
- A** Plasmodium  
**B** Schistosoma  
**C** Trypanosoma  
**D** Vibrio cholerae
- 34** Which **one** of the following is the most effective way of avoiding HIV infection by someone who is not infected?
- A** Avoiding sexual intercourse.  
**B** Having one sexual partner.  
**C** Using condoms during sexual intercourse.  
**D** Using spermicides during sexual intercourse.

- 35** The diagram below shows a simple version of the energy flow through a food chain.



What happens to the energy leaving the decomposers?

- A** Adds to soil fertility.
  - B** Lost as heat.
  - C** Lost in undigested food (faeces).
  - D** Returns to the sun.
- 36** The diagram shows a part of the carbon cycle. Which letter represents fossilisation?



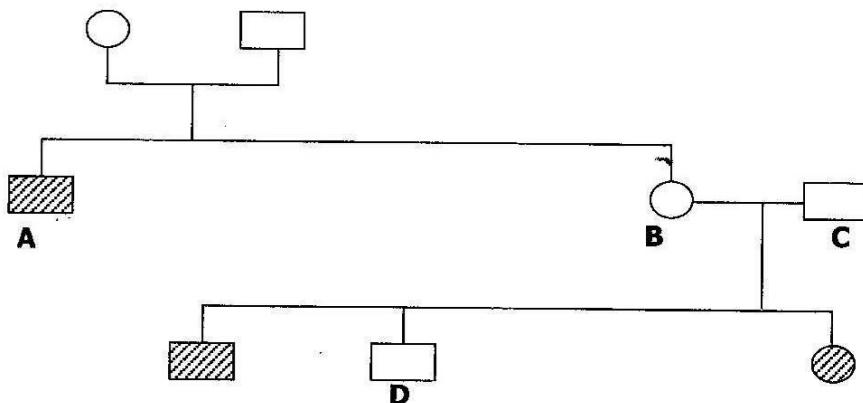
- 37** Which of the following is an effect of deforestation?

- A** Decreased carbon dioxide content in the air.
  - B** Decreased flooding of low lying land.
  - C** Increased rainfall.
  - D** Increased rate of soil erosion.
- 38** An insect has 42 chromosomes in each of its muscle cells.

How many chromosomes are there in its egg cells?

- A** 42
- B** 30
- C** 25
- D** 21

- 39** If the allele for round seeds is dominant to the allele for wrinkled seeds, how many wrinkled seeds can be obtained in a cross of 200 heterozygous plants to yield 1500 round seeds?
- A** 6000  
**B** 2000  
**C** 1500  
**D** 500
- 40** The diagram shows a family pedigree in which some members have sickle cell anaemia.



Which person could have two alleles for sickle cell anaemia?

**Key**

- Male with sickle cell anaemia
- Female with sickle cell anaemia
- Normal male
- Normal female



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