

# The City School

Unified Mid-Year Examinations  
2018 - 2019  
Class 10



SCHOOL NAME

INDEX NUMBER

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DATE

**BIOLOGY**

Paper 1 Multiple Choice

**5090/12**

**1 hour**

Additional Materials: Multiple Choice Answer Sheet  
Soft Pencil  
Soft clean eraser

## READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use paper clips, highlighters, glue or correction fluid.

Write your School name, Index number and Date in the spaces provided.

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 **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.

Electronic calculators may be used.

Invigilated By: \_\_\_\_\_

Checked By: \_\_\_\_\_

Marks Talled By: \_\_\_\_\_

This document consists of **15** printed pages and **1** blank page.

- 1 What are the responses to decreased body temperature?
- A shivering and vasoconstriction in blood vessels near the skin surface
  - B shivering and vasodilation in blood vessels near the skin surface
  - C sweating and vasoconstriction in blood vessels near the skin surface
  - D sweating and vasodilation in blood vessels near the skin surface

2 What are the symptoms of diabetes?

	concentration of glucose	
	in blood	in urine
A	+	+
B	+	-
C	-	+
D	-	-

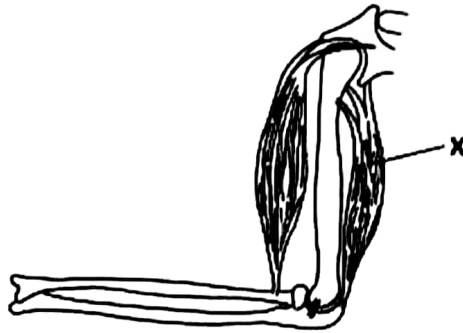
3 Which row correctly describes the connections of the neurones in a reflex action?

	receptor to central nervous system	between neurones	central nervous system to effector
A	motor neurone	relay neurone	sensory neurone
B	motor neurone	sensory neurone	relay neurone
C	sensory neurone	motor neurone	relay neurone
D	sensory neurone	relay neurone	motor neurone

4 What does the hypothalamus control?

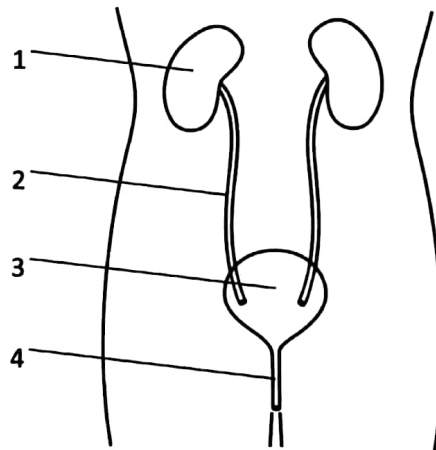
- A body temperature
- B heart rate
- C insulin secretion
- D rate of breathing

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



What happens when muscle X contracts?

- A The lower arm is extended.
  - B The lower arm is raised.
  - C The upper arm is lowered.
  - D The upper arm is raised.
- 6 The diagram shows the human urinary system.



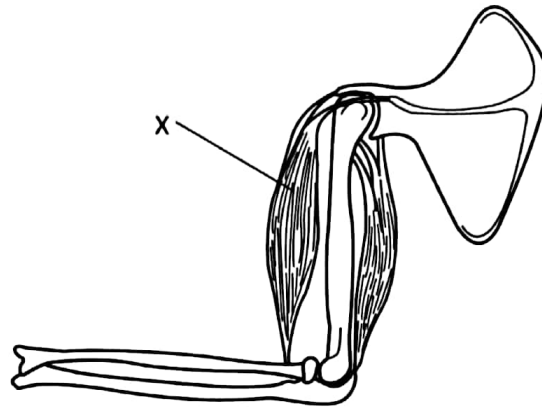
What are the correct labels for structures 1, 2, 3 and 4?

	1	2	3	4
A	bladder	ureter	kidney	urethra
B	bladder	urethra	kidney	ureter
C	kidney	ureter	bladder	urethra
D	kidney	urethra	bladder	ureter

- 7** Which part of the brain controls body temperature?
- A** cerebellum
  - B** cerebrum
  - C** hypothalamus
  - D** medulla
- 8** What is the role of motor neurons in reflex action?
- A** carrying nerve impulses from the central nervous system to an effector
  - B** connecting a receptor to the central nervous system
  - C** forming a synapse with a sensory neurons
  - D** transferring energy from the stimulus to a nerve impulse
- 9** Opticians sometimes place drops of a chemical in a patient's eye to keep the pupil wide open.
- Which muscles contract when this chemical is used?
- A** ciliary muscle
  - B** circular iris muscles
  - C** muscles that move the eyeball
  - D** radial iris muscles
- 10** How does adrenaline affect glucose uptake by muscle cells and carbohydrate conversion by liver cells?

	<b>glucose uptake</b>	<b>carbohydrate conversion</b>
<b>A</b>	decreases	glucose to glycogen
<b>B</b>	decreases	glycogen to glucose
<b>C</b>	increases	glucose to glycogen
<b>D</b>	increases	glycogen to glucose

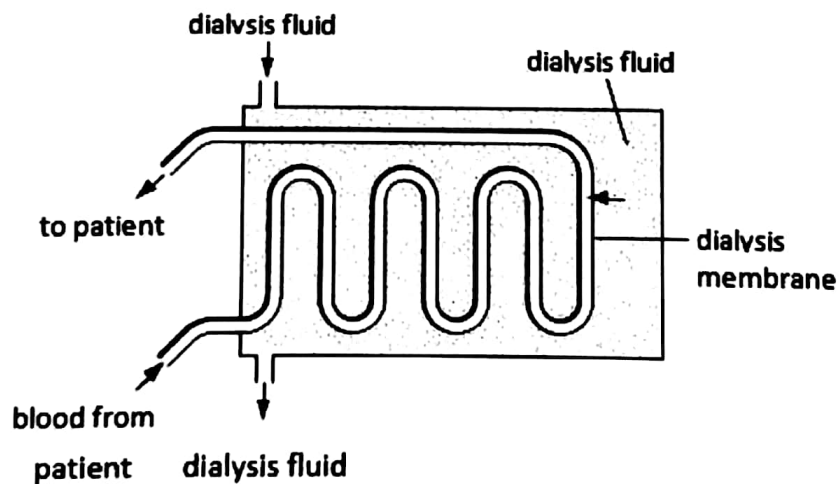
11 The diagram shows parts of the human forelimb.



What will happen if a nerve impulse stimulates X?

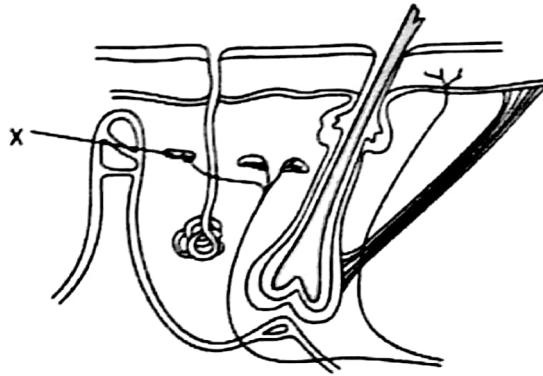
	muscle contracted	effect
A	biceps	arm bends
B	biceps	arm straightens
C	triceps	arm bends
D	triceps	arm straightens

12 In a kidney dialysis machine, which substance cannot diffuse through the dialysis membrane?



- A glucose
- B insulin
- C sodium
- D urea

13 The diagram shows some of the structures seen in a section through human skin.



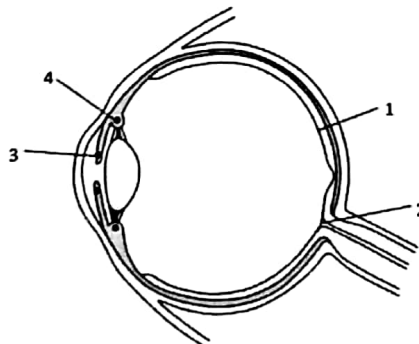
What is the function of structure X?

- A to cause capillaries to constrict
- B to detect changes in temperature
- C to receive impulses from the central nervous system
- D to stimulate sweat glands to release sweat

14 Which row describes the shoulder joint of an arm?

	Shoulder Joint		
	bones	Joint type	action
A	radius ulna	ball and socket	flexion and extension
B	scapula humerus	ball and socket	rotation
C	radius ulna	hinge	rotation and extension
D	scapula humerus	hinge	flexion and extension

15 The diagram shows a section through the eye.



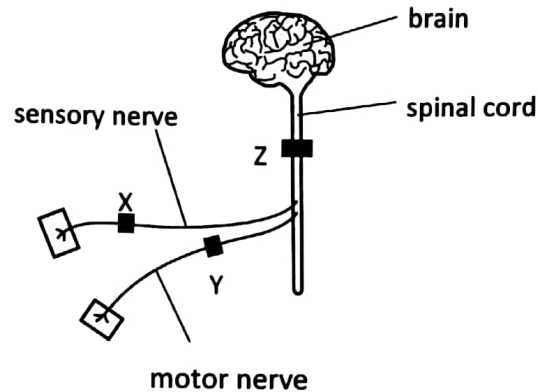
In the pupil reflex, which row gives the sites of the effectors and receptors involved?

	effectors	receptors
A	3	1
B	3	2
C	4	1
D	4	2

- 16 In a person suffering from diabetes mellitus, how do the concentrations of glucose in the blood and in the urine differ from those of a healthy person?

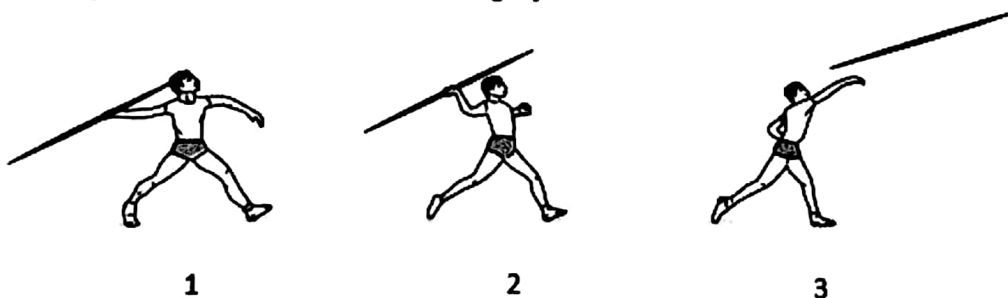
	concentration of glucose in blood	concentration of glucose in urine
A	higher	higher
B	higher	same
C	same	lower
D	lower	lower

- 17 A local anesthetic is a drug used to block nerve impulses. The diagram represents part of the nervous system. X, Y, and Z show sites where the anesthetic can be injected.



In an experiment, one person can feel a pin prick their leg but cannot move their leg. Where was the anesthetic injected in this person?

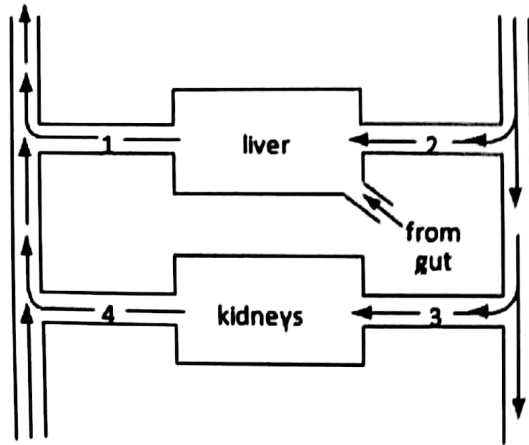
- A at X                      B at Y                      C at Z                      D at X and at Y
- 18 The diagrams show an athlete throwing a javelin.



Which row describes the change in position of the right arm, and the action of the muscles involved, between stages 2 and 3?

	position of arm	biceps	triceps
A	flexes	contract	relax
B	flexes	relax	contract
C	straightens	contract	relax
D	straightens	relax	contract

19 The diagram represents the blood supply to the liver and to the kidneys.



Which vessels contain blood with the highest and lowest concentrations of urea?

	highest	lowest
A	1	2
B	1	4
C	3	2
D	3	4

20 Which changes will occur when a person walks from a very cold room into a hot room?

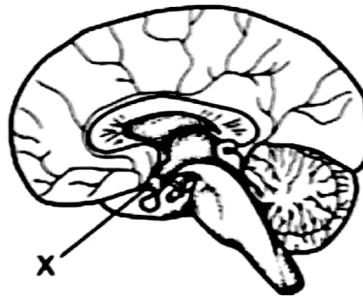
	sweating	skin blood vessels
A	decreases	constrict
B	decreases	dilate
C	increases	dilate
D	increases	constrict

21 What happens in the eye when a person walks from a dark room into sunlight?

	circular muscles of the iris	radial muscles of the iris	pupil size
A	relax	contract	decreases
B	relax	contract	increases
C	contract	relax	decreases
D	contract	relax	increases



22 The diagram shows a section of the brain.

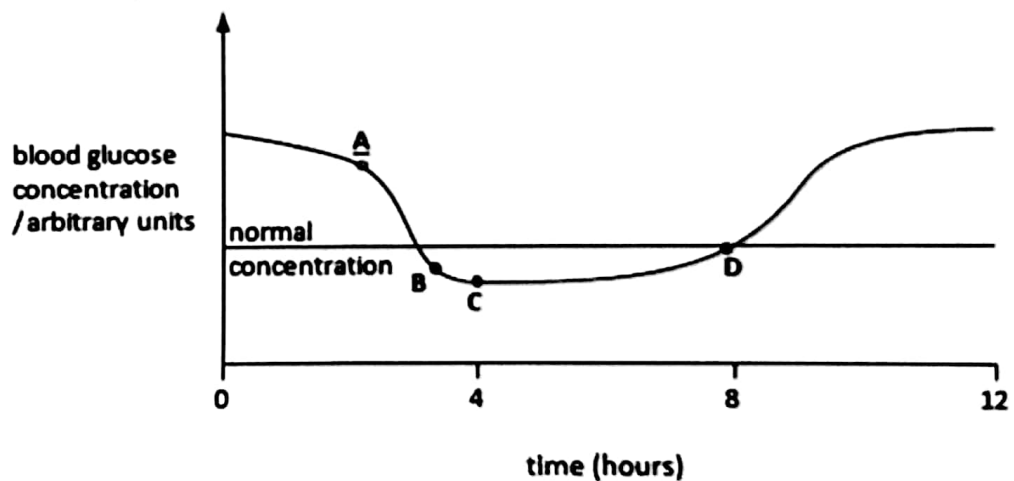


What could be a result of damage to the part labelled X?

- A difficulty in breathing
- B inability to control body temperature
- C may cause rickets
- D raised insulin levels

23 A person with diabetes mellitus is receiving treatment with insulin injections.

The graph shows how this person's blood glucose concentration changed during part of one day. At what point was an insulin injection given?



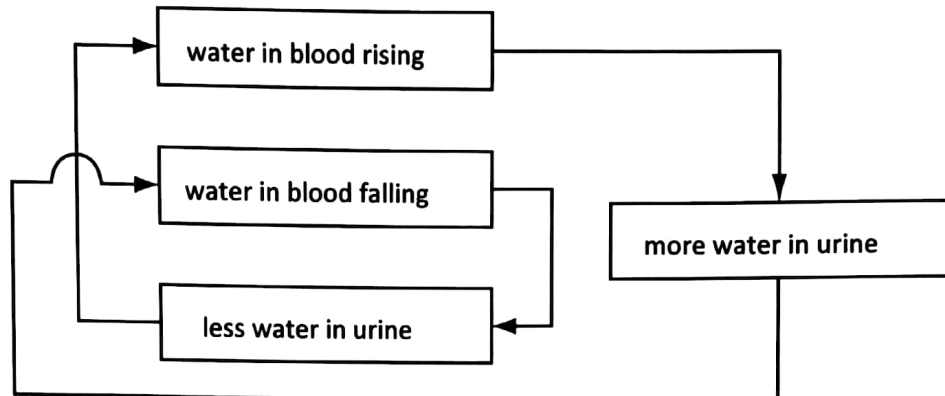
24 What is the correct sequence of the bones in the arm of a mammal, from the hand to the shoulder?

	hand	→	shoulder
A	humerus	radius	scapula
B	humerus	scapula	radius
C	radius	humerus	scapula
D	scapula	radius	humerus

25 What is not an excretory product of mammals?

- A carbon dioxide in expired air
- B undigested food in faeces
- C urea in sweat
- D urea in urine

26 The diagram refers to the control of water concentration in the blood.

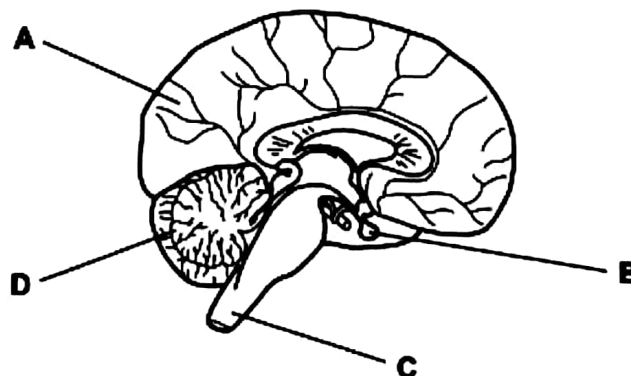


Why is this a negative feedback system?

- A It decreases the amount of water in the blood.
- B It increases any change in the amount of water in the blood.
- C It increases the amount of water in the blood.
- D It reverses any change in the amount of water in the blood.

27 The diagram represents a section through the brain and part of the spinal cord.

Which part of the brain controls balance?



28 What are the functions of the relay, motor and sensory neurones in a reflex response?

	relay neurone	motor neurone	sensory neurone
A	to connect neurones within the central nervous system	to conduct impulses to the effector from the central nervous system	to conduct impulses from the receptor to the central nervous system
B	to conduct impulses to the effector	to connect neurones within the central nervous system	to receive the stimulus
C	to conduct impulses from the central nervous system to the effector	to conduct impulses from the receptor to the central nervous system	to connect neurones within the central nervous system
D	to conduct impulses from the receptor to the central nervous system	to conduct impulses from the receptor to the central nervous system	to conduct impulses to the effector

29 What decreases as a result of adrenaline secretion?

- A blood sugar level
- B digestive activity
- C heart rate
- D size of the pupils of the eyes

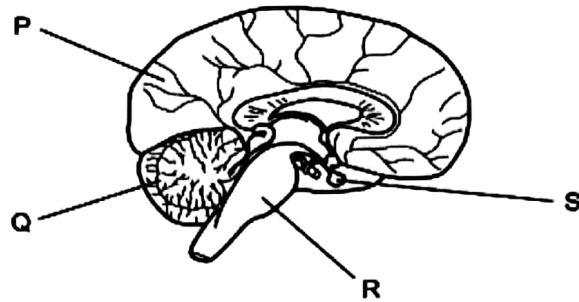
30 Which cannot be an example of excretion?

- A Carbon dioxide is breathed out from the lungs.
- B Undigested food leaves the body through the anus.
- C Urea leaves the body in urine.
- D Water is removed through the kidneys.

31 Which structures are involved in controlling human body temperature?

- A blood vessels near the skin surface, the cerebellum and sweat glands
- B blood vessels near the skin surface, the hypothalamus and skeletal muscles
- C kidneys, the cerebellum and sweat glands
- D kidneys, the hypothalamus and skeletal muscles

32 The diagram shows a section through the brain and part of the spinal cord.



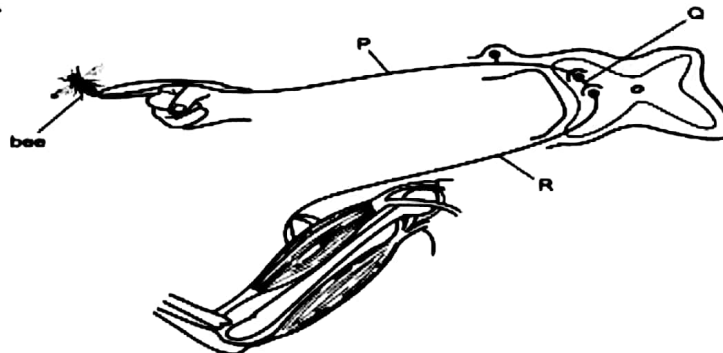
Which row correctly identifies the cerebral hemisphere, cerebellum, medulla and pituitary gland?

	cerebral hemisphere	cerebellum	medulla	pituitary gland
A	P	Q	R	S
B	P	R	Q	S
C	Q	R	S	P
D	S	P	R	Q

33 Which is not controlled directly by the nervous system?

- A blood glucose concentration
- B dilation of the blood vessels
- C heart rate
- D pupil diameter in the eye

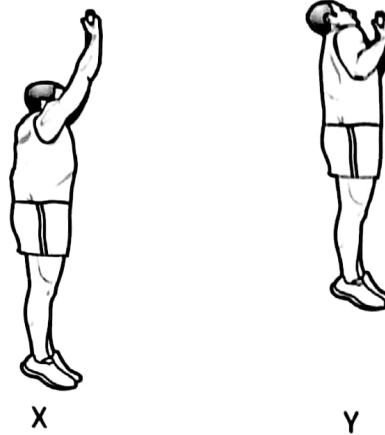
34 The diagram shows a reflex arc in which a bee sting causes the arm to be moved quickly.



If the relay neurone at Q is damaged, how will the transmission of nerve impulses in the reflex arc be affected?

- A They cannot pass from P to Q.
- B They cannot pass from P to R.
- C They cannot pass from Q to P.
- D They cannot pass from R to Q.

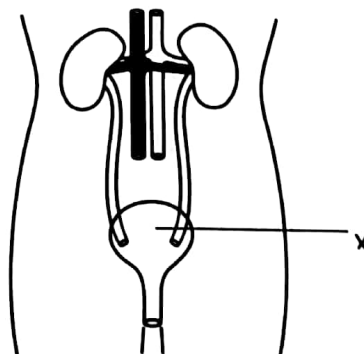
35 The diagram shows a person doing 'pull ups' on a horizontal bar.



In moving from the lower position X to the upper position Y, which muscles and joint movements occur?

	<b>biceps</b>	<b>triceps</b>	<b>ball and socket joint</b>
<b>A</b>	contracts	relaxes	rotates
<b>B</b>	contracts	relaxes	extends
<b>C</b>	relaxes	contracts	rotates
<b>D</b>	relaxes	contracts	flexes

36 The diagram shows the human excretory system.



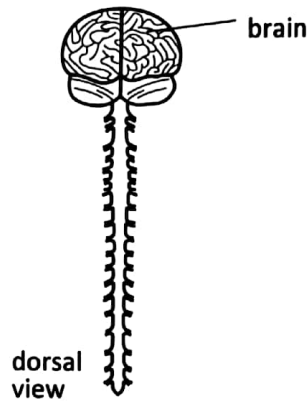
What is the function of X?

- A to excrete urea
- B to produce urea
- C to produce urine
- D to store urine

37 A person walks from a warm room into a cold one. Which of these reactions occurs first?

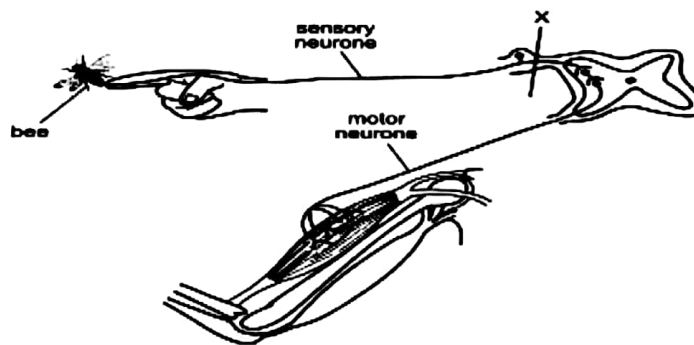
- A cold receptors in the skin are stimulated
- B cooler blood reaches the brain
- C deep arterioles in the skin dilate
- D shivering begins

38 The diagram shows the dorsal view of the central nervous system.



Which structures are visible?

- A cerebrum, cerebellum, hypothalamus, spinal cord
  - B cerebrum, spinal nerves, spinal cord, cerebellum
  - C spinal nerves, cerebrum, medulla, pituitary gland
  - D spinal cord, medulla, cerebrum, hypothalamus
- 39 The diagram shows part of a person's nervous system that has been cut at X.



A bee stings the finger, as shown. What are the effects of this sting on the person?

	pain felt	arm moved
A	no	no
B	no	yes
C	yes	no
D	yes	yes

**40** What is an effect of insulin?

- A** decreased cell respiration
- B** decreased absorption of glucose by cells
- C** increased excretion of glucose
- D** increased synthesis of glycogen