

# The City School

Unified Mid-Year Examination  
2016 - 2017  
CLASS 9



CANDIDATE NAME

INDEX NUMBER

--	--	--	--	--

DATE: \_\_\_\_\_

**BIOLOGY**  
**Paper 1 Multiple Choice**

**5090/12**  
**1 hour**

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

## READ THESE INSTRUCTION FIRST

Write in soft pencil.

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

Write your name and index number on the Answer Sheet in the spaces provided.

There are **thirty** 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.

Electronic calculators may be used.

This document consists of **14** printed pages

1. A human cheek cell and a spongy mesophyll cell from a leaf are examined under a microscope.

Which structures are seen in both cells?

- A. cell membrane, nucleus and cytoplasm
- B. cell wall, cell membrane and nucleus
- C. cytoplasm, cell wall and cell membrane
- D. nucleus, cytoplasm and cell wall

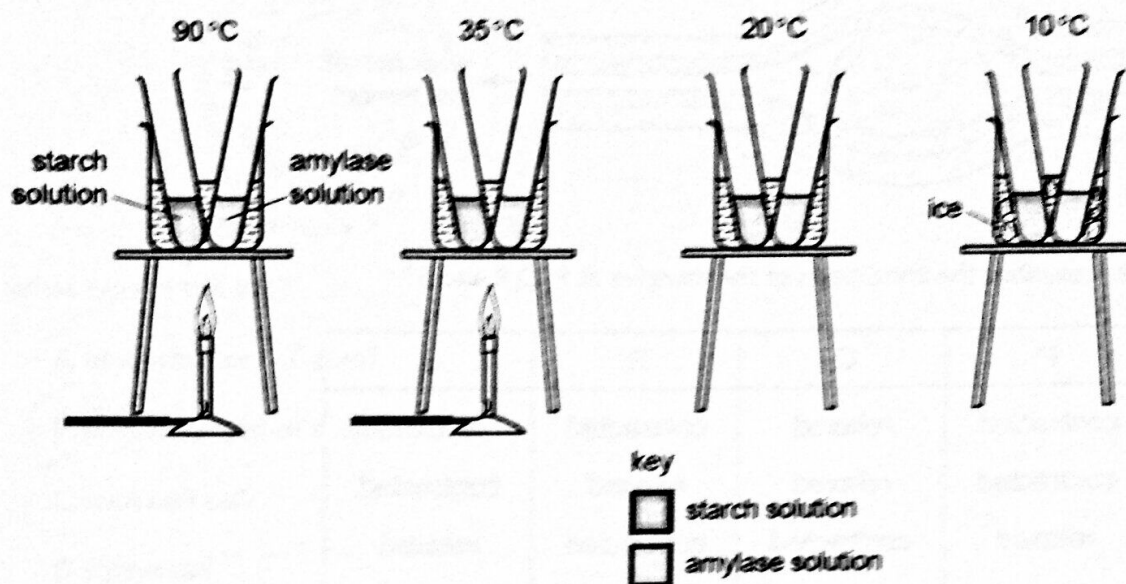
2. The mass of a cube of fresh potato is found. It is then placed in a test-tube containing a dilute solution of sucrose. After an hour, its mass has increased.

Which process has occurred and what has happened to the concentration of the sucrose in the solution in the test-tube?

	process	sucrose concentration
<b>A</b>	active transport	decreased
<b>B</b>	active transport	increased
<input checked="" type="radio"/> <b>C</b>	osmosis	decreased
<b>D</b>	osmosis	increased

3. The diagram shows an experiment on amylase.

Each beaker contains water at the temperature shown.



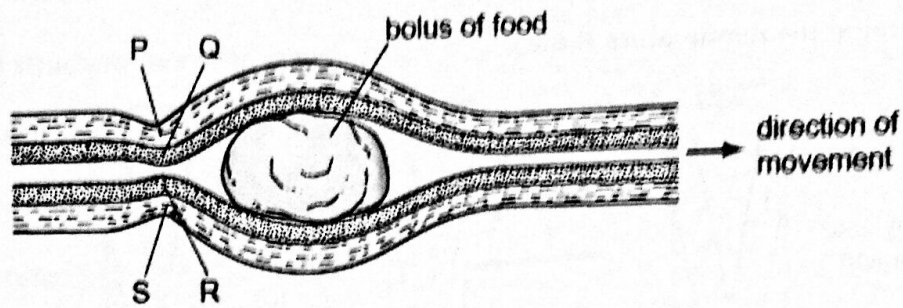
After five minutes, each test-tube of amylase is poured into the test-tube of starch solution in the same beaker.

After leaving the tubes for 5 minutes, samples of the mixture are tested with iodine solution and are then tested again at 5 minute intervals.

Which results are expected?

	90°C	35°C	20°C	10°C
A	blue-black after 30 minutes	goes yellow-brown immediately	goes yellow-brown after 5 minutes	blue-black after 30 minutes
B	blue-black after 30 minutes	goes yellow-brown after 5 minutes	goes yellow-brown immediately	blue-black after 30 minutes
C	goes yellow-brown immediately	goes yellow-brown after 5 minutes	goes yellow-brown after 5 minutes	blue-black after 30 minutes
D	goes yellow-brown after 5 minutes	blue-black after 30 minutes	blue-black after 30 minutes	goes yellow-brown after 5 minutes

4. The diagram shows a bolus of food moving along the oesophagus.



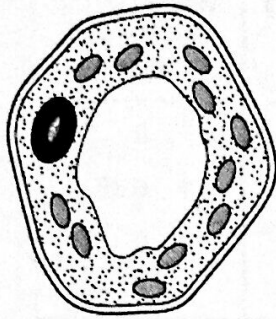
Which row describes the conditions of the muscles at P, Q, R and S?

	P	Q	R	S
<b>A</b>	contracted	relaxed	contracted	relaxed
<b>B</b>	contracted	relaxed	relaxed	contracted
<b>C</b>	relaxed	contracted	contracted	relaxed
<b>D</b>	relaxed	contracted	relaxed	contracted

5. What causes water to enter plant roots from the soil?

- A. Water potential in root hairs and the soil is equal.
- B. Water potential in root hairs and xylem is equal.
- C. Water potential in root hairs is higher than in the soil.**
- D. Water potential in root hairs is lower than in the soil.

6. The diagram shows one type of plant cell.



What type of cell is it?

A. epidermal cell of a leaf

B. mesophyll cell of a leaf

C. root hair cell

D. xylem cell

7. A lack of which nutrient causes gums to bleed?

A. calcium

B. iron

C. vitamin C

D. vitamin D

8. Which chemical elements are found in Carbohydrates, Proteins and Fats?

	carbohydrates	fats	proteins
<input checked="" type="radio"/> A	carbon, hydrogen and oxygen	carbon, hydrogen and oxygen	carbon, hydrogen, oxygen and nitrogen
B	carbon, hydrogen and oxygen	carbon, hydrogen, oxygen and nitrogen	carbon, hydrogen and oxygen
C	carbon, hydrogen, oxygen and nitrogen	carbon, hydrogen and oxygen	carbon, hydrogen and oxygen
D	carbon, hydrogen, oxygen and nitrogen	carbon, hydrogen and oxygen	carbon, hydrogen, oxygen and nitrogen

8. The table shows some of the nutrients present in four foods.

food	iron /mg per 100 g of food	calcium /mg per 100 g of food	vitamin C /mg per 100 g of food	vitamin D / $\mu$ g per 100 g of food
1 banana	0.4	7	10	0
2 fish	0.4	35	0	6.38
3 lentils	7.6	30	0	0
4 milk	0.1	120	0.5	0.002

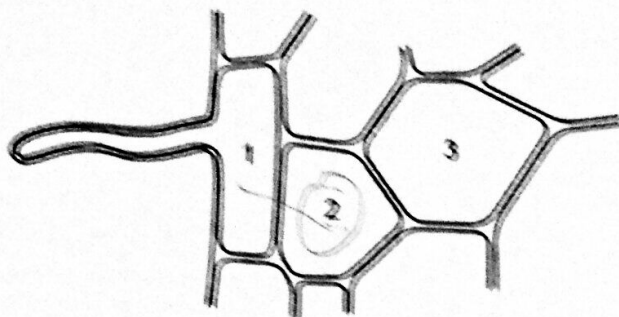
Which two foods are best to help the healthy growth of bones and teeth of a child?

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

10. Which processes are responsible for the uptake of ions from the soil by a plant and the uptake of glucose into the villi of a human?

	uptake of ions into root hairs	uptake of glucose into the villi
A	active transport	osmosis
B	active transport	active transport
C	diffusion	osmosis
D	osmosis	active transport

11. The diagram shows some cells in the root of a plant that is absorbing water from the soil.



How does the water potential of the cell marked 2 differ from the water potentials of the cells marked 1 and 3?

- A. higher than cell 1 and cell 3
- B. higher than cell 1 and lower than cell 3
- C. lower than cell 1 and higher than cell 3
- D. lower than cell 1 and lower than cell 3

12. According to the lock and key hypothesis, which is the lock and which is the key for the enzyme lipase?

	key	lock
<b>A</b>	fatty acids	lipids
<b>B</b>	lipase	lipids
<b>C</b>	lipase	fatty acids
<input checked="" type="radio"/> <b>D</b>	lipids	lipase

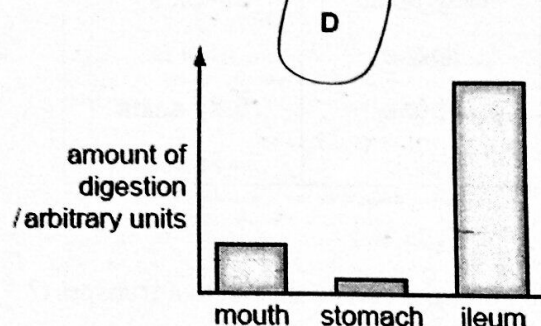
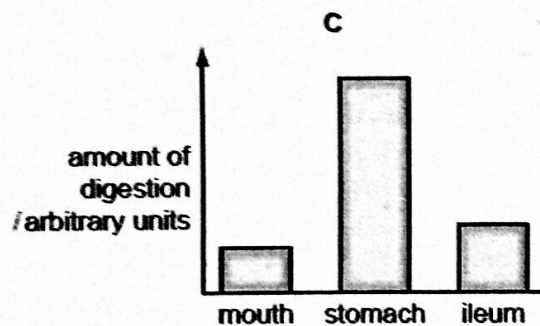
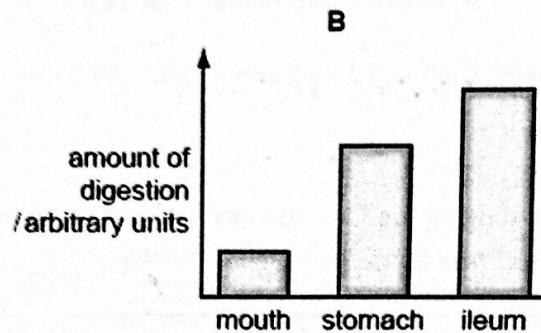
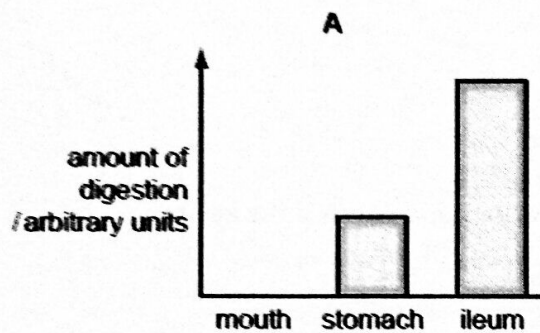
13. Which process can involve active transport?

- A. carbon dioxide intake through stomata
- B. mineral ion intake through root hairs
- C. mineral ion transport through xylem vessels
- D. water leaving mesophyll cells

14. A person tries eating a diet consisting only of lettuce leaves and water. Which condition might develop?

- A. constipation
- B. heart disease
- C. rickets
- D. scurvy

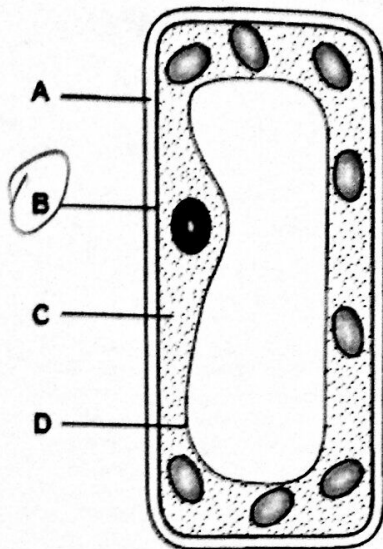
15. Which bar chart represents the amount of starch digested in the mouth, stomach and ileum of a human?



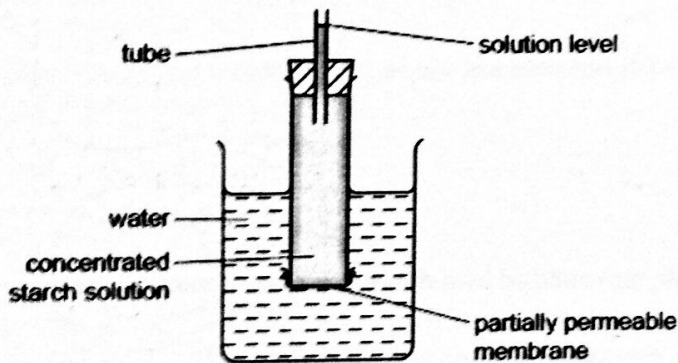


16. The diagram shows a plant cell.

Which labelled structure controls the passage of substances into and out of the cell?



17. The diagram represents apparatus used to investigate osmosis.



Which molecules will move across the partially permeable membrane and which change will occur in the solution level?

	molecules	solution level
<b>A</b>	starch	fall
<b>B</b>	starch	rise
<b>C</b>	water	fall
<b>D</b>	water	rise

18. The small intestine of a person contains a lower concentration of glucose than is present in the blood.

The cells of the villi absorb glucose. By which process is the glucose absorbed?

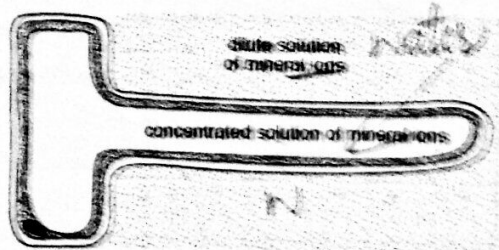
- A. by active transport against the concentration gradient
- B. by active transport with the concentration gradient
- C. by diffusion against the concentration gradient
- D. by diffusion with the concentration gradient

19. Which statements are correct for all enzymes?

- 1 They are proteins.
- 2 They are secreted into the alimentary canal.
- 3 They speed up biochemical reactions.
- 4 None of them work at low pH.

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

20. The diagram shows a root hair, surrounded by a dilute solution of mineral ions.



Which statement is correct?

- A. Water molecules move into the root hair because their concentration is lower inside.
- B. Water molecules move into the root hair because their concentration is lower outside.
- C. Water molecules move out of the root hair because their concentration is lower inside.
- D. Water molecules move out of the root hair because their concentration is lower outside.

21. What are the substrate and end-products of digestion by the enzyme lipase?

	substrate	end-product
<b>A</b>	carbohydrate	glucose
<b>B</b>	fat	amino acids
<b>C</b>	fat	fatty acids and glycerol
<b>D</b>	protein	fatty acids and glycerol

22. Which processes can take place in a root hair cell when oxygen is not available?

- A. active transport only
- B. diffusion only**
- C. active transport and osmosis only
- D. diffusion and osmosis only

23. The diagram represents a cell as seen under the electron microscope.



What type of cell is this?

	type of cell	reason
<b>A</b>	animal cell	outer layer is the cell membrane
<b>B</b>	bacterium	no chromosomes are visible
<b>C</b>	plant cell	cytoplasm is visible
<b>D</b>	plant cell	cell wall is visible

24. Which symptom is caused by a deficiency of vitamin D?

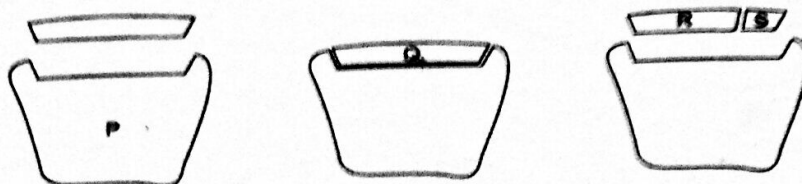
- A. anaemia
- B. bones breaking easily**
- C. constipation
- D. gums bleeding

25. Protease breaks down proteins into amino acids.

In the 'lock and key' hypothesis, what is the lock and what is the key?

	lock	key
<b>A</b>	amino acid	protease
<b>B</b>	protease	amino acid
<b>C</b>	protease	protein
<b>D</b>	protein	protease

26. The diagram represents stages in the breakdown of starch to maltose by the enzyme amylase.



Which are the correct labels?

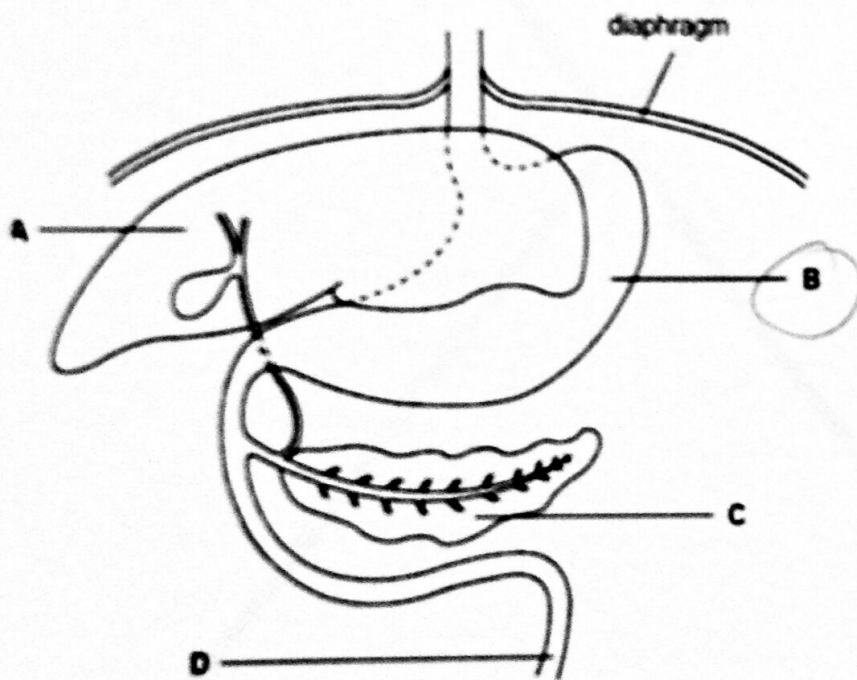
	amylase	maltose	starch
<b>A</b>	P	S	Q
<b>B</b>	Q	R	S
<b>C</b>	R	Q	P
<b>D</b>	S	P	R

27. Which row in the table correctly identifies the deficiency diseases caused by lack of vitamin C, calcium and iron?

	lack of vitamin C	lack of calcium	lack of iron
<b>A</b>	anaemia	rickets	scurvy
<b>B</b>	brittle bones	anaemia	rickets
<b>C</b>	rickets	scurvy	brittle bones
<b>D</b>	scurvy	brittle bones	anaemia

28. The diagram shows the human digestive system.

Which part secretes an acidic digestive juice containing a protease?



29. The element nitrogen is needed to form

- A. fat.
- B. protein.
- C. starch.
- D. sugar.

30. Which process involves the use of nutrients inside cells?

- A. absorption
- B. assimilation
- C. digestion
- D. ingestion