

# The City School



Unified Mid-Year Examination  
2016 - 2017  
CLASS 9

CANDIDATE NAME

INDEX NUMBER

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

**BIOLOGY**  
**Paper 2 Theory**

**5090/22**  
**1 hour 30 minutes**

Candidates answer on the Questions Paper.  
No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Name, Index number on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working

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

Answer **all** questions in Section A and B.

Write your answers in the spaces provided on the Question Paper.

Answer any **One** question in Section C.

You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **10** printed pages

**SECTION-A**

1 Fig. 1.1 shows some of the information on the packets of two breakfast cereals.

**Cereal C**

**Cereal D**

<b>Nutrition Information</b>	
Typical value per 100g	
ENERGY	1623 kJ
PROTEIN	13g
CARBOHYDRATE	78g
of which sugars	24g
starch	54g
FAT	1.5g
of which saturates	0.5g
FIBRE	2.5g
SODIUM	0.4g
SALT	1g
<b>VITAMINS:</b>	<b>(% GDA)</b>
VITAMIN D	7.4 µg (147)
VITAMIN C	88 mg (147)
THIAMIN (B <sub>1</sub> )	2.1 mg (147)
RIBOFLAVIN (B <sub>2</sub> )	2.4 mg (147)
NIACIN	26.5 mg (147)
VITAMIN B <sub>6</sub>	2.9 mg (147)
FOLIC ACID	294 µg (147)
VITAMIN B <sub>12</sub>	1.47 µg (147)
<b>MINERALS:</b>	
IRON	16.2 mg (73)

<b>Nutrition Information</b>	
Typical value per 100g	
ENERGY	1600 kJ
PROTEIN	10g
CARBOHYDRATE	68g
of which sugars	20g
starch	48g
FAT	5g
of which saturates	0.9g
FIBRE	9g
SODIUM	0.01g
SALT	0.03g
<b>VITAMINS:</b>	<b>(% GDA)</b>
THIAMIN (B <sub>1</sub> )	1 mg (73)
RIBOFLAVIN (B <sub>2</sub> )	2.3 mg (145)
NIACIN	13.1 mg (73)
VITAMIN B <sub>6</sub>	2.9 mg (145)
FOLIC ACID	290 µg (145)
VITAMIN B <sub>12</sub>	0.73 µg (73)
<b>MINERALS:</b>	
IRON	10.2 mg (73)

- (a) The Guideline Daily Amount (GDA) of energy for an average adult is 8 400 kJ.
- (i) Calculate the percentage of this GDA a person would obtain by eating one 25 g serving of Cereal D. Show your working in the space provided.

Answer .....% [3]

(ii) State how the daily energy requirement of a hard-working farmer would differ from the GDA described above.

..... [1]

(b) Cereal D is considered to be better for people suffering from constipation than Cereal C. Suggest a reason for this.

.....[1]

(c) Rickets is a condition that affects some children.

(i) Describe the symptoms of rickets.

.....  
..... [2]

(ii) State which cereal, C or D, should be eaten by children to prevent rickets and Explain your answer.

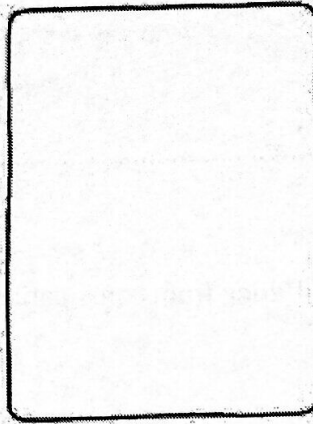
Cereal .....

Explanation .....

.....  
..... [3]

[Total: 10]

2 In Fig. 2.1, the line drawn represents the cell membrane of a plant cell.



*Transport  
in flowering  
plants*

(a) On Fig. 2.1 draw, name and label

(i) a structure that gives the cell its rigid shape,

(ii) a structure that contains chromosomes,

(iii) a structure that contains varying amounts of water, ions and sugars. [3]

X (b) List three structural changes that must occur in young, unmodified plant cells as they develop into xylem tissue.

1 .....

2 .....

3 .....

[3]

(c) A small, leafy branch is cut from a tree. After some hours, the stem of the branch remains firm but the leaves become limp. Suggest an explanation for this. stem remains firm

.....

.....

.....

leaves become limp .....

.....

.....

.....[6]

[Total: 12]

3 (a) Fig. 3.1 shows the effect of temperature on the activity of enzyme E.

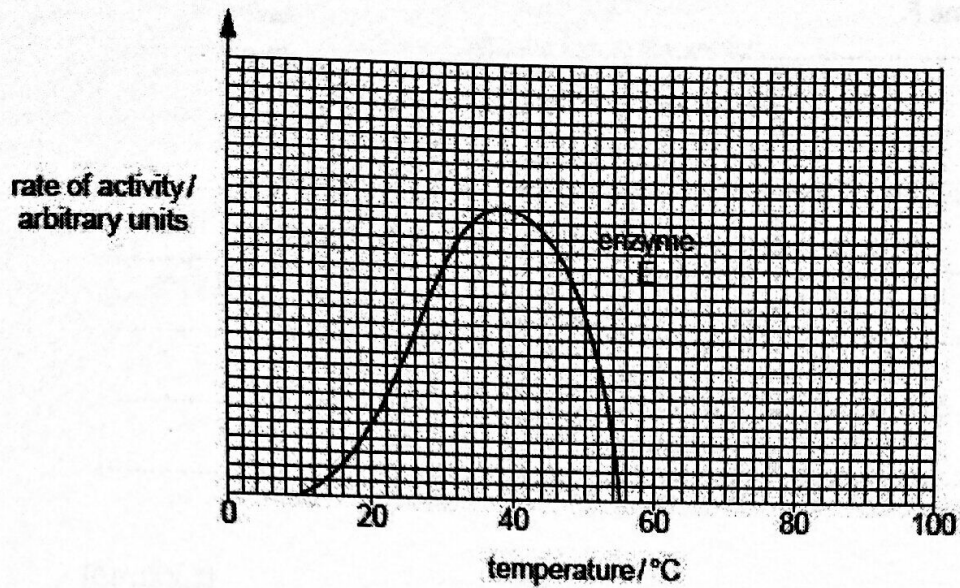


Fig 3.1

(i) State the optimum temperature for enzyme E.....[1]

(ii) Suggest a possible identity for enzyme E, where it is found, and its function.

Identity of enzyme E .....

Where it is found.....

function.....

[3]

(b) Fig. 5.2 shows the effect of temperature on the activity of another enzyme, F.

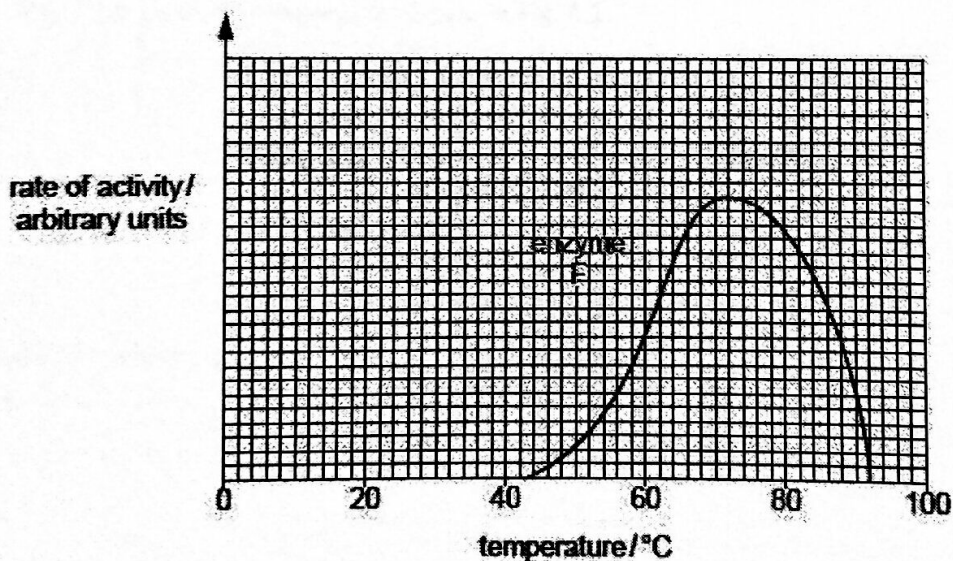


Fig 3.2

State and explain what would happen to the activity of enzyme E at the optimum temperature for enzyme F.

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.....

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.....

.....

.....[6]

**[Total: 10]**

SECTION-B

Answer both questions in this section.

Write your answers in the spaces provided.

4. Fig. 4.1 shows diagrammatically the action of enzymes on two different food molecules.

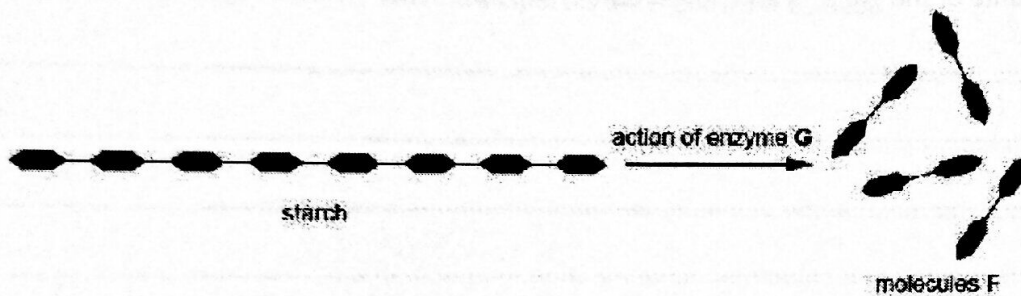
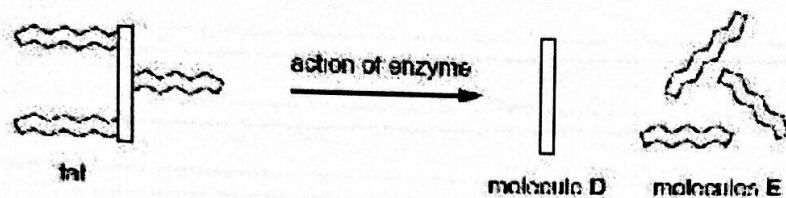


Fig. 4.1

(a) Fig. 4.1 Identify the molecules shown in Fig. 4.1.

D .....

E .....

F .....

[3]

(b) Identify enzyme G. ....

[1]

(c) It has been found that fresh pineapple contains an enzyme that can be used to make meat more tender.

(i) Explain why the pineapple is placed on the meat a few hours before, rather than during, cooking.

.....  
.....  
.....  
.....

[3]

(ii) Suggest the name of the enzyme and how it tenderises the meat.

.....  
.....  
.....  
.....

[3]

[Total: 10]

5 (a) List the chemical elements that make up

(i) fats, .....

(ii) proteins. .... [2]

(b) Explain why carbohydrates are important constituents of a balanced diet.

.....  
.....  
.....  
.....

[3]

[Total: 5]



**SECTION-C**

Answer only **one** question from Section C

**6 (a) (i)** Explain the term osmosis.

.....  
.....  
.....  
.....  
.....  
.....  
.....[4]

**(ii)** Explain the ways in which active transport is different from osmosis.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....[4]

**[Total: 8]**

7 (a) Explain what is meant by an enzyme and its mechanism.

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[4]

(b) Describe and explain how pH and temperature affect enzyme activity.

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[4]

[Total: 8]