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KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

MARKS :50

TIME: 1 Hour

This question paper consist of 9 pages.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers to each question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams, tables or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You may use a non-programmable calculator, protractor and a compass.
11. Write neatly and legibly.

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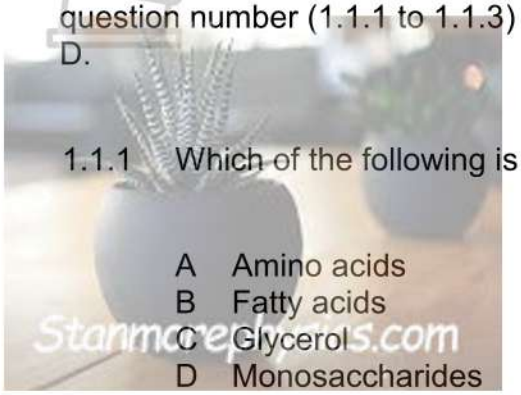
SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.3) in your ANSWER BOOK, for example 1.1.4 D.



1.1.1 Which of the following is a monomer of proteins?

A Amino acids
B Fatty acids
C Glycerol
D Monosaccharides

1.1.2 The role of a centrosome during mitosis is to…

A connects two chromatids.
B split and move to opposite poles.
C produce two daughter cells.
D introduce genetic variation.

1.1.3 Below is a list of importances of mitosis

(i) Repairs damaged / worn out cells/ tissues
(ii) Responsible for formation of gametes
(iii) Allows reproduction
(iv) Provide cells with energy

Which ONE of the following is CORRECT combination of the importance's of mitosis?

A (i), (iii), (iv) only
B (i), (ii) ,(iii), (iv)only
C (i), (iii) only
D (i), (iv) only (3x2) (6)

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1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.5) in your ANSWER BOOK.

1.2.1 Part of microscope that helps to bring the specimen into focus

1.2.2 Phase in mitosis where chromosomes are arranged at the equator

1.2.3 The movement of water molecules from high concentration of water molecules to low concentration of water molecules

1.2.4 Site of protein synthesis

1.2.5 Chemical used to test for starch

(1x5) **(5)**

1.3 Indicate whether each of the statements in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B or NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B,** or **none** next to the question number (1.3.1 to 1.3.2) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Treatment for cancer	A: Chemotherapy B: Physiotherapy
1.3.2	Joins two chromatids together	A: Centrosome B: Centromere

(2x2) **(4)**

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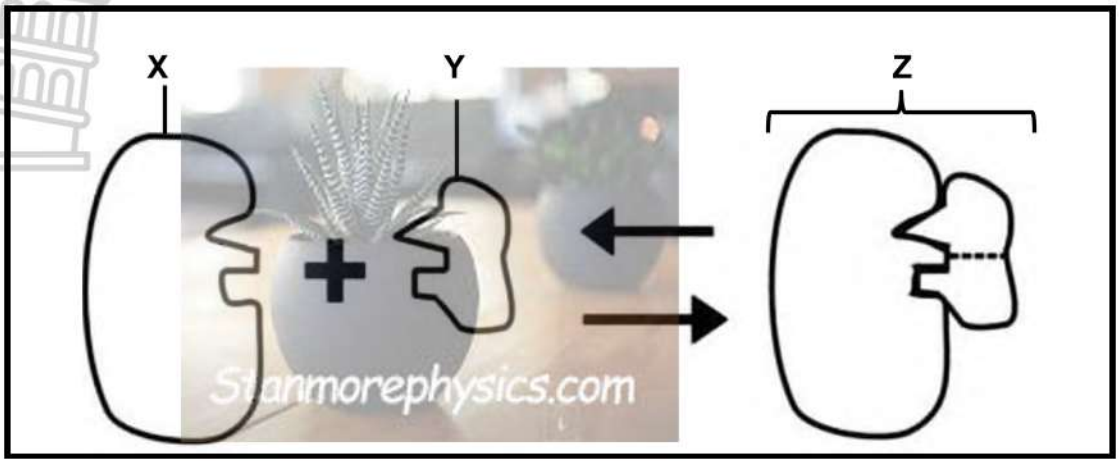
1.4 The diagram below shows a property of an enzyme



1.4.1 Identify:

(a) Structure **Y** (1)

(b) Structure **Z** (1)

(c) The type of model shown in the diagram (1)

1.4.2 Give the LETTER and NAME of the part that will not be used up in a chemical reaction (2)
(5)

TOTAL SECTION A **20**

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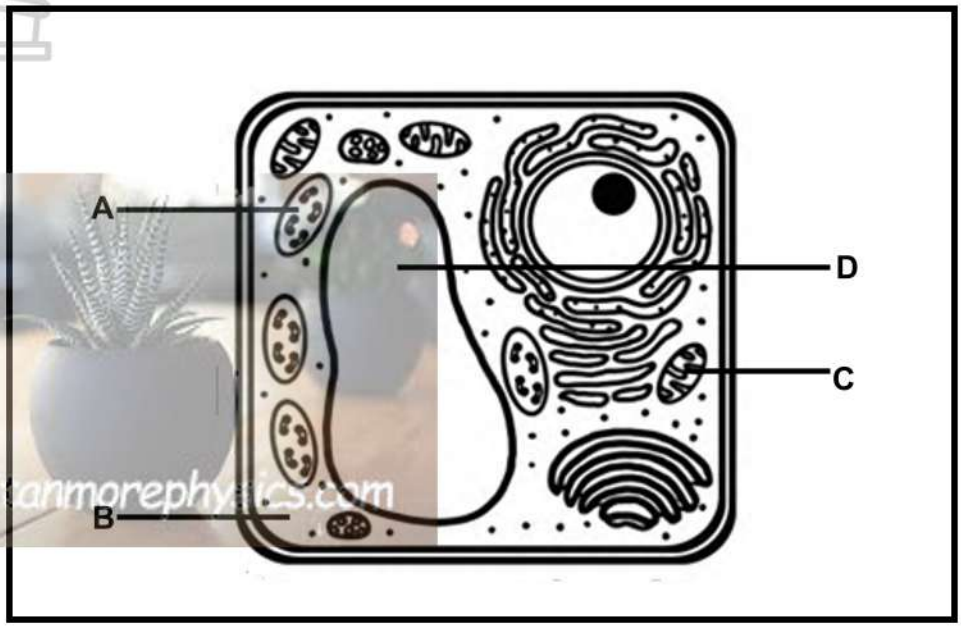
SECTION B

QUESTION 2

2.1 The diagram below shows a plant cell



2.1.1 Identify part **C** (1)

2.1.2 State ONE function of part **B** (1)

2.1.3 Identify TWO visible features in the diagram that are not typical of animal cells. (2)

2.1.4 Explain:

(a) the effect to the plant cell if part **D** become smaller (4)

(b) how the number (quantity) of part **A** will benefit this plant cell (2)
(10)

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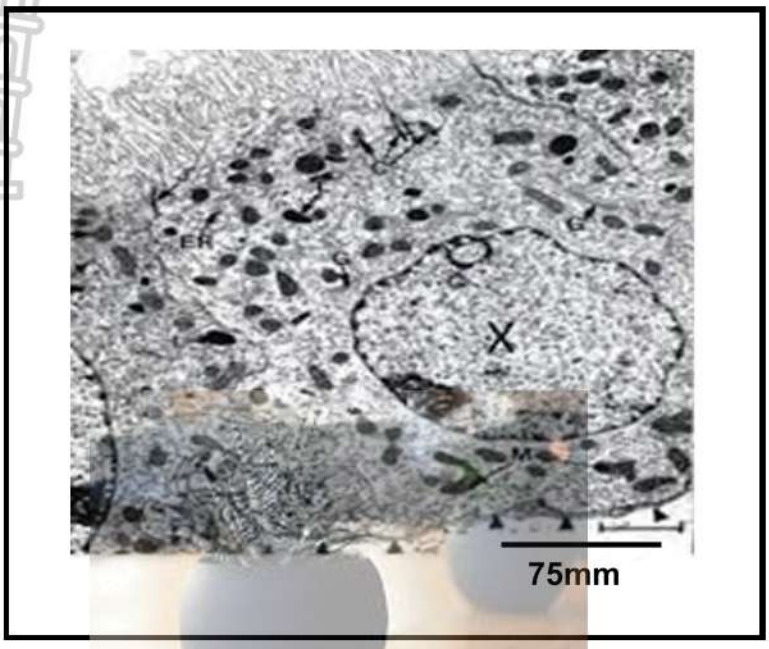
2.2 The diagram below a micrograph of a nucleus



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2.2.1 State TWO functions of part **X** /nucleus (2)

2.2.2 Calculate the actual size of part **X** in micrometres (1mm = 1000µm).

The measured size of the image using a ruler is 75mm and the electron microscopic magnification is 2000x, using the formula:
Actual size = measured size ÷ magnification.
Show ALL calculations

(3)
(5)
[15]

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QUESTION 3

3.1 Amylase is an enzyme that hydrolyses(breaks down) starch into maltose (sugar) in humans

Kelvin conducted an investigation to determine the effect of temperature on amylase breaking down sugar

The procedure of the investigation:

- a solution of amylase was mixed with starch suspension
- the mixtures were kept in test tubes at different temperatures for 15 minutes
- the results were recorded in the table below

Temperatures (°C)	Units of sugar (arb.)
10	10
20	36
30	65
40	90
50	30
60	9

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3.1.1 Identify the independent variable of the above investigation (1)

3.1.2 Give the optimum temperature for amylase activity (1)

3.1.3 Explain your answer in QUESTION 3.1.2 (2)

3.1.4 Draw a line graph to represent the data in the table above (6)
(10)

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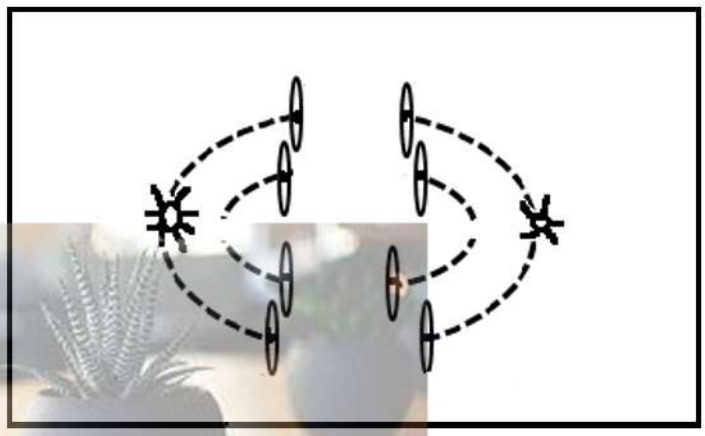
3.2 The diagram below shows a phase in mitosis



3.2.1 Identify the phase of mitosis shown above (1)

3.2.2 Describe the events that are taking place in the phase mentioned in QUESTION 3.2.1. (3)

3.2.3 State how many chromosomes will be present at the end of this cell division (1)
(5)
[15]

TOTAL SECTION B: 30

GRAND TOTAL: 50

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KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

FINAL

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

COMMON TEST

MARKING GUIDELINE

Stanmorephysics.com

MARCH 2025

Marks: 50

N.B This marking guideline consist of 7 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for but descriptions are given**
   Accept if the differences/similarities are clear.

5. **If tabulation is required but paragraphs are given**
   Candidates will lose marks for not tabulating.

6 **If diagrams are given with annotations when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of the answer if correct.

10 **Wrong numbering**
   If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
   Do not accept.

12. **Spelling errors**
   If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**

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14. Accept, provided it was accepted at the national memo discussion meeting.
If only the letter is asked for but only the name is given (and vice versa)

15. **If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated in a different way.**

17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

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SECTION A

QUESTION 1

1.1 1.1.1 A ✓✓
1.1.2 B ✓✓
1.1.3 C ✓✓

2x3 **(6)**

1.2 1.2.1 Coarse adjustment knob✓
1.2.2 Metaphase ✓
1.2.3 Diffusion✓
1.2.4 Ribosome ✓
1.2.5 Iodine✓ solution

1x5 **(5)**

1.3 1.3.1 A only ✓✓
1.3.2 B only✓✓

2x2 **(4)**

1.4 1.4.1 (a) Substrate✓ molecule (1)
(b) Enzyme-substrate complex ✓ (1)
(c) Lock and key✓ model (1)

1.4.2 X✓ – Enzyme ✓ (2)
(5)

TOTAL SECTION A (20)

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SECTION B

QUEATION 2

2.1 2.1.1 Mitochondrion ✓ (1)

2.1.2 - Provide medium for many chemical reactions✓to take place
- Contains all the organelles of the cell✓
(Mark the first ONE only) Any (1)

2.1.3 It has:
- cell wall✓
- chloroplast✓
- large vacuole✓
(Mark the first TWO only) Any (2)

2.1.4 (a) - The cell will lose water✓
- turgor pressure will decrease✓
- Cell will become flaccid✓
- resulting in the loss of its shape ✓ (4)

(b) - Large number of part A / chloroplasts ✓
- Will increase the amount of light absorbed✓ / the rate of photosynthesis/ amount of food produced (2)
(10)

2.2 2.2.1 - Controls all the activities in the cell✓
- Contains DNA which carry hereditary characteristics✓ (2)
(Mark the first TWO only)

2.2.2 Actual size = 75mm÷ 2000✓ OR (75 x 1000)÷ 2000✓
= 0,0375 x 1000✓ = 75000 ÷ 2000✓
= 37,5µm✓ = 37,5µm✓
(3)
(5)
[15]

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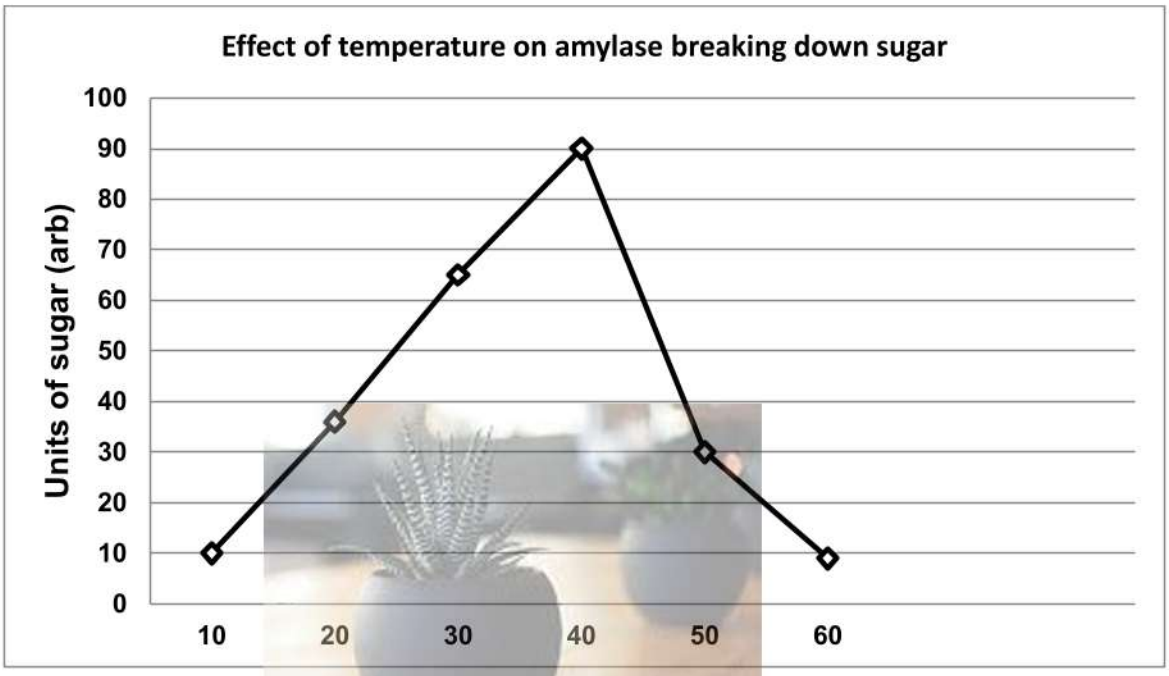
QUESTION 3

3.1 3.1.1 Temperature ✓ (1)

3.1.2 40✓ °C (1)

3.1.3 - It was where the enzyme activity was at its maximum/best✓
- Where it breaks down most of the sugar✓ / 90 sugar units (2)

3.1.4



Criteria for marking of the graph:

Criteria	Mark allocation
Correct type of graph **(T)**	1
Caption **(C)**	1
Correct labels with units in both Y & X –axis (**L**)	1
Correct scale in both Y and X – axis **(S)**	1
Plotting **(P)** correctly done for: 1- 5 points plotted ALL six points plotted	 1 2

(6)

(10)

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3.2	3.2.1	Anaphase ✓	(1)
	3.2.2	- Spindle fibres contract✓/ shorten - Pulling chromatids✓ - To opposite poles✓	(3)
	3.2.3	4✓ /four	(1)
			(5)
			(15)

TOTAL SECTION B: 30
GRAND TOTAL: 50

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