KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

MARCH COMMON TEST

2023

MARKS : 50

TIME: 1 Hour

This question paper consist of 9 pages.

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.

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 1.1.5) in your ANSWER BOOK, for example 1.1.5 D.

1.1.1 Which ONE of the following can be used to treat cancer?

A Physiotherapy
B Radiography
C Ideography
D Chemotherapy

1.1.2 The function of mitochondria is to…

A surrounds and protect the cell
B provide the cell with energy
C supplies water to the cell
D controls substances that enter and leave the cell

1.1.3 Below is a list of phases of mitosis
(i)Anaphase
(ii) Telophase
(iii) Prophase
(iv) Metaphase

Which ONE of the following combinations show a sequence in mitosis?

A (iv)→(ii)→(i)→(iii)
B (iii)→(iv)→(i)→(ii)
C (i)→(ii)→(iv)→(iii)
D (iii)→(iii)→(iv)→(i)

(6)

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 1.2.4) in your ANSWER BOOK.

1.2.1 Transport of molecules across membranes against a concentration gradient, which therefore requires energy

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

1.2.3 The part of microscope that is used to hold the slide into place

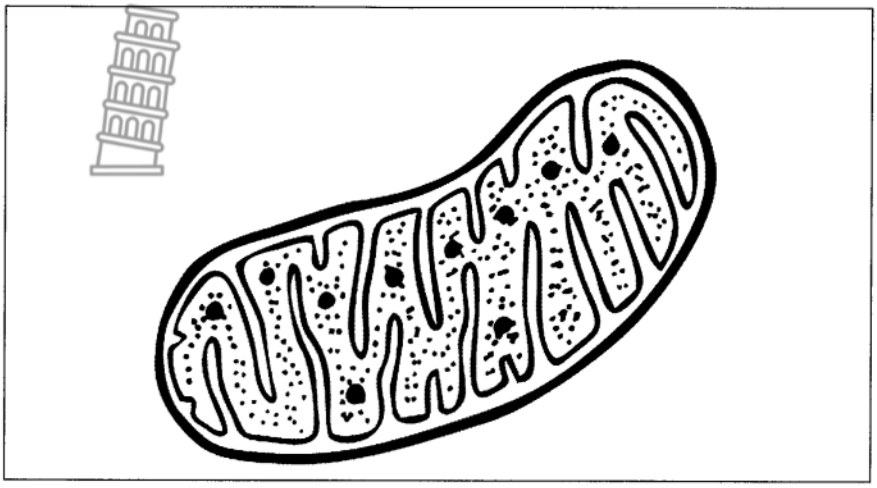
1.2.4 An organelle that is the site of protein synthesis 4x1 **(4)**

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 1.3.3) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Phase in the cell cycle where DNA replication takes place	A: Telophase B: Interphase
1.3.2	Organelles found in animal cells only	A: Vesicles B: Lysosomes

2x2 **(4)**

1.4	The diagram below show a cell organelle



1.4.1 Identify the diagram shown above (1)

1.4.2 State TWO places where the diagram mentioned in 1.4.1 can be found (2)

1.4.3 Explain the role of the above diagram to the places stated in 1.4.2 (2)

1.4.4 Give the name of the gas used by this organelle for cellular respiration (1)
(6)

TOTAL SECTION A [20]

SECTION B

QUEATION 2

2.1 The table below shows amounts of different types of food eaten by a learner and organic compounds
The total of organic compounds she ate is 144,9 g

Food types	Organic compounds (g)		
	Carbohydrates	Proteins	Fats
Potatoes	17	2	0,1
Chicken	0	(a)	3,8
Peanut butter	20	25	50

2.1.1 Identify the food type that is made mostly of fats (1)

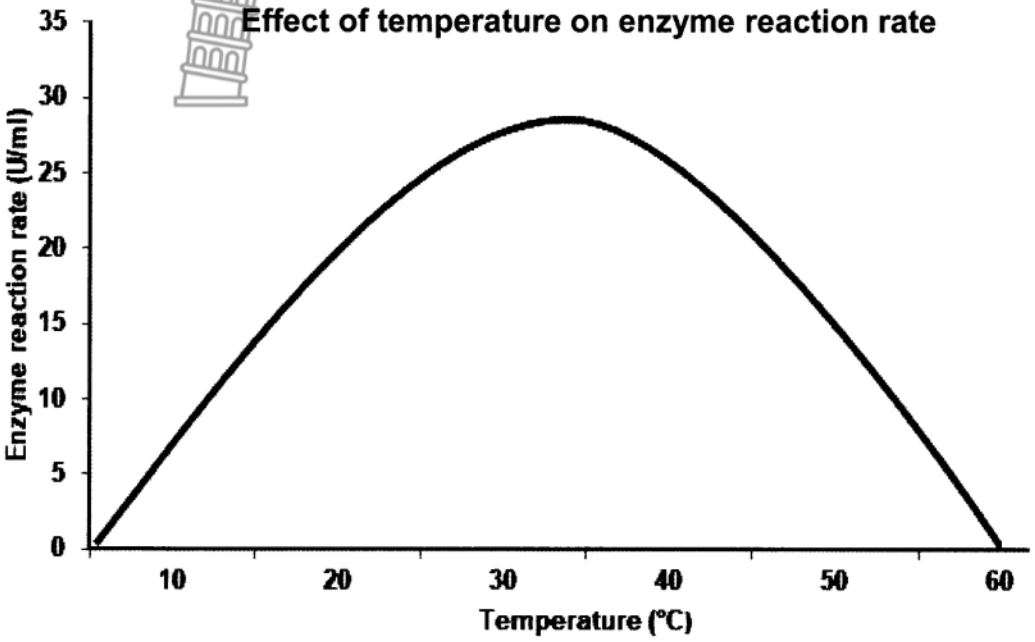
2.1.2 State the monomers of fats (1)

2.1.3 Calculate (a), show all your workings (2)

2.1.4 Give the chemical reagent used to test proteins (1)

2.1.5 Explain the colour change when a starch test using iodine is done on the potatoes. (2)
(7)

2.2 The graph below shows the results of an investigation that was conducted by grade 10 learners to determine the effect of temperature on enzyme rate of reaction. .



2.2.1 Identify:

(a) Dependent variable (1)
(b) Independent variable (1)

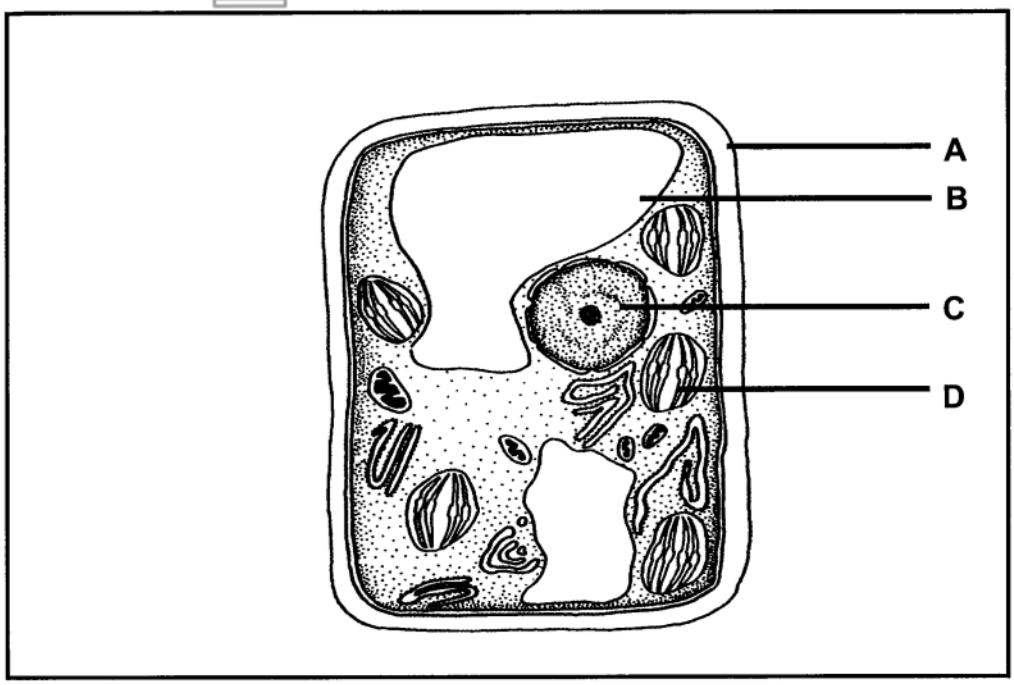
2.2.2 State the aim of the above investigation (2)

2.2.3 Using information from the graph explain why 35° is considered the optimum temperature for the enzyme reaction rate (2)

2.2.4 List TWO ways in which the reliability of the above investigation could be improved (2)
(8)
[15]

QUESTION 3

3.1 The diagram below shows a plant cell.



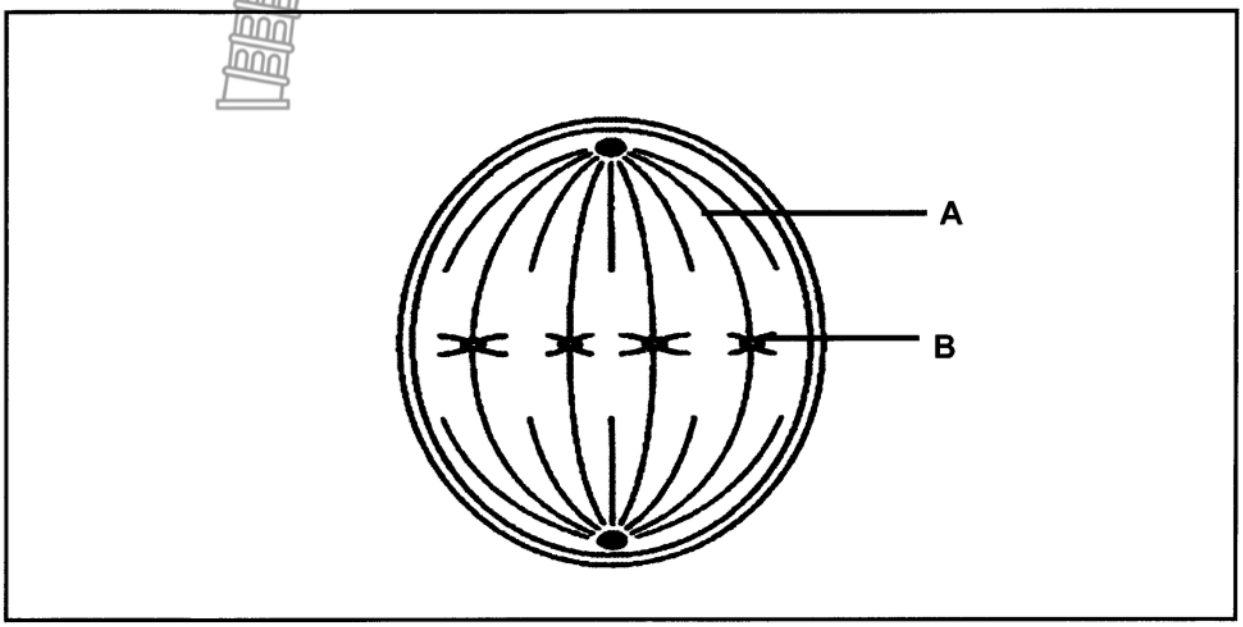
3.1.1 Name TWO useful substances that part **B** contains (2)

3.1.2 State ONE function of part **C** (1)

3.1.3 Give the LETTER and the NAME of the part that is selectively permeable (2)

3.1.4 Explain ONE advantage for this cell having many part **D**'s (2)
(7)

3.2 The diagram below shows one of the phases of mitosis



3.2.1 Identify part:

(a) A (1)
(b) B (1)

3.2.2 Give ONE visible reason to show that the phase above is metaphase (1)

3.2.3 How many chromosomes will be found in each cell at the end of the cell division? (1)

3.2.4 Draw the diagram to represent the phase that occurs after the one shown above (4)

(8)

TOTAL QUESTION 3 [15]
TOTAL SECTION B [30]
GRAND TOTAL [50]

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MARKING GUIDELINE

2023

MARKS: 50

N.B This marking guideline consist of 7 pages

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**
   Accept, provided it was accepted at the national memo discussion meeting.

14. **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.**

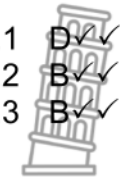
17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

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.

SECTION A

QUESTION 1

1.1 1.1.1 D✓✓
1.1.2 B✓✓
1.1.3 B✓✓



2X3 **(6)**

1.2 1.2.1 Active transport✓
1.2.2 Osmosis✓
1.2.3 Stage clip✓
1.2.4 Ribosomes✓

1x4 **(4)**

1.3 1.3.1 B only✓✓
1.3.2 Both A and B✓✓ 2x2 **(4)**

1.4 1.4.1 Mitochondria✓ (1)

1.4.2 Animal✓ and plant✓ cell (2)

1.4.3 They break down glucose molecule ✓to provide energy to the cell✓ (2)

1.4.4 Oxygen✓ (1)
(6)

TOTAL QUESTION 1 [20]
TOTAL SECTION A [20]

SECTION B

QUEATION 2

2.1 2.1.1 Peanut butter ✓ (1)

2.1.2 Fatty acids and glycerol (1)

2.1.3 a = 17g+2g+0,1g+0g+3,8g+20g+25g+50g✓
=117g
144,9 – 117,9✓ =27g✓ (2)

2.1.4 Millions reagent ✓ (1)

2.1.5 The colour change to blue black✓indicate the presence of the starch✓ (2)
(7)

2.2 2.2.1 (a) Enzyme rate of reaction✓ (1)

(b) Effect of temperature✓ (1)

2.2.2 To determine the effect of temperature on enzyme rate of reaction✓✓ (2)

2.2.3 Enzyme reaction rate was at its maximum point at 35°/was 29 U/ml which is the highest rate of reaction for enzyme✓
And it drastically dropped after 35°✓ (2)

2.2.4 Increase sample size✓
Repeat the investigation✓ (2)
Calculate the average✓ **(8)**
Mark the first two **[15]**

QUESTION 3

3.1 3.1.1 Sugars ✓
Minerals✓
Pigments in water✓ (2)
Mark first two

3.1.2 Control activities of the cell✓
Transmit hereditary characteristics from parents to offspring ✓ (1)
Mark any one

3.1.3 A✓ – cell membrane✓ (2)

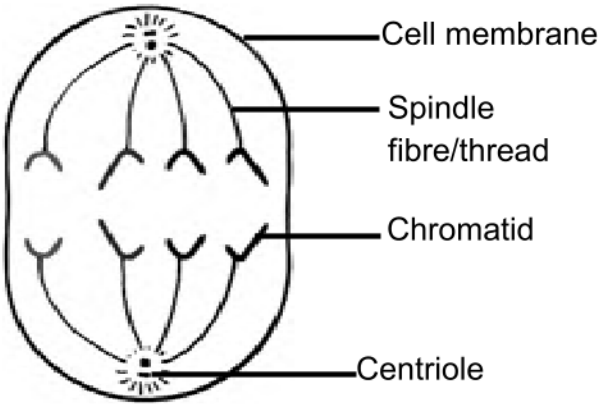
3.1.4 Many part D/ chloroplasts will increase food production✓
chloroplast absorb light for photosynthesis for plants to manufacture food✓ (2)
(7)

3.2 3.2.1 A – spindle fibre/thread✓ (1)
B – Centromere✓ (1)

3.2.2 Chromosomes are arranged at the equator line✓ (1)

3.2.3 4/four✓ (1)

3.2.4 **Anaphase**



Marking rubric:

Features	Marks
Caption (**C**)	1
Correct phase (**P**)	1
Correct number of chromosomes/chromatids (**N**)	1
Any one correct label (**L**)	1

(4)

TOTAL QUESTION 3 [15]
TOTAL SECTION B [30]
GRAND TOTAL [50]