KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

COMMON TEST

APRIL 2021

MARKS: 60

TIME: 1 hour

This question paper consists of 8 pages.

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INSTRUCTIONS AND INFORMATION

11

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your 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. ALL drawings should be done in pencil and labelled in blue or black ink.
7. Draw diagrams 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 1.1.4) in your ANSWER BOOK, for example 1.1.4 D.

1.1.1 Which ONE of the following elements is only present in proteins?
A Oxygen
B Hydrogen
C Nitrogen
D Carbon

1.1.2 Which ONE of the following is the CORRECT combination for a deficiency disease and a lacking vitamin with regards to the following symptoms?

Symptom: Bleeding gums and poor wound healing
A Scurvy and vitamin D
B Scurvy and vitamin C
C Scurvy and vitamin B
D Scurvy and vitamin A

1.1.3 Which of the following molecules is the main substance that makes up the primary cell wall?
A Glucose
B Starch
C Cellulose
D Glycogen

1.1.4 When a pupil observed plant tissue under a microscope, the magnification was x400. Which combination of lenses provided this magnification?
A 10x eye-piece and a 40x objective
B 40x eye-piece and a 20x objective
C 200x eye-piece and a 200x objective
D 100x eye-piece and a 300x objective

(4 x 2) **(8)**

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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 1.2.4) in your ANSWER BOOK.

1.2.1 The division of the cytoplasm

1.2.2 The organelle that contains digestive enzymes in a cell

1.2.3 The element whose deficiency results in goitre

1.2.4 The pigment in green leaves that traps light (4x 1) **(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	Site of protein synthesis	A: Mitochondrion B: Golgi body
1.3.2	Provides source of natural light in a microscope	A: Mirror B: Eye piece

(2x2) **(4)**

1.4 Define the following:

1.4.1 Diffusion

1.4.2 Osmosis (2x2) **(4)**

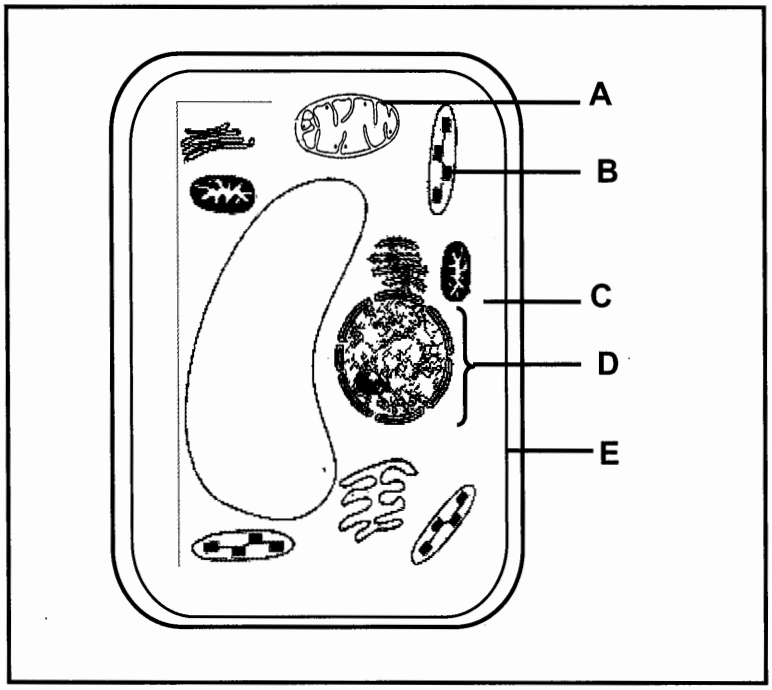
TOTAL SECTION A: 20

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SECTION B

QUESTION 2

2.1 The diagram below represents the cell.



2.1.1 Does the diagram represent a plant or animal cell? (1)

2.1.2 Give THREE visible reasons for your answer. (3)

2.1.3 Identify part:

(a) **C** (1)

(b) **E** (1)

2.1.4 Give the LETTER only of the part that:

(a) Controls cell activities (1)

(b) Releases energy during cellular respiration (1)

2.1.5 Describe how part **E** is adapted to its function. (2)
(10)

2.2 The table below shows nutritional information for some common food sources and organic compounds.

FOOD SOURCE (g)	ORGANIC COMPOUNDS		
	PROTEIN	FAT	CARBOHYDRATES
Bananas	1.1 g	0 g	19.2 g
Potatoes	1.4 g	0 g	19.7 g
Sausages	18.0 g	32.0 g	9.5 g
Baked beans	5.1 g	0.4 g	10.3 g

2.2.1 Name the food source/s that:

(a) Would be best suited to provide high amounts of energy. (1)

(b) Has least amount of proteins (1)

2.2.2 Write down TWO organic compounds that are found in high amounts in sausages. (2)

2.2.3 What are the monomers of proteins? (1)

2.2.4 Name the chemical reagent used to test for proteins. (1)
(6)

2.3 Describe how to test for the presence of starch in a food sample. **(4)**
[20]

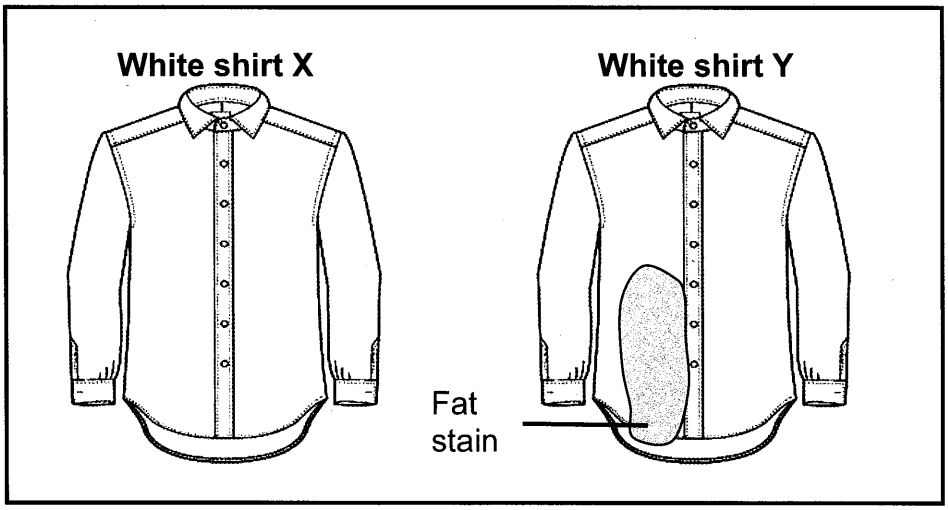
QUESTION 3

3.1 An investigation was carried out to determine the effect of high temperature on a washing powder containing fat-digesting enzymes.

The procedure was as follows:

- Two same school white shirts were used.
- White shirts **X** and **Y** had same fat stains.
- White shirt **X** was washed using detergent containing fat-digesting enzymes for 3 minutes at 37 ^{0}C.
- White shirt **Y** was washed using a detergent containing fat-digesting enzymes for 3 minutes in boiling water.
- The investigation was repeated five times.

The results of the investigation are shown below.



3.1.1 Identify:

(a) Dependent variable (1)

(b) Independent variable (1)

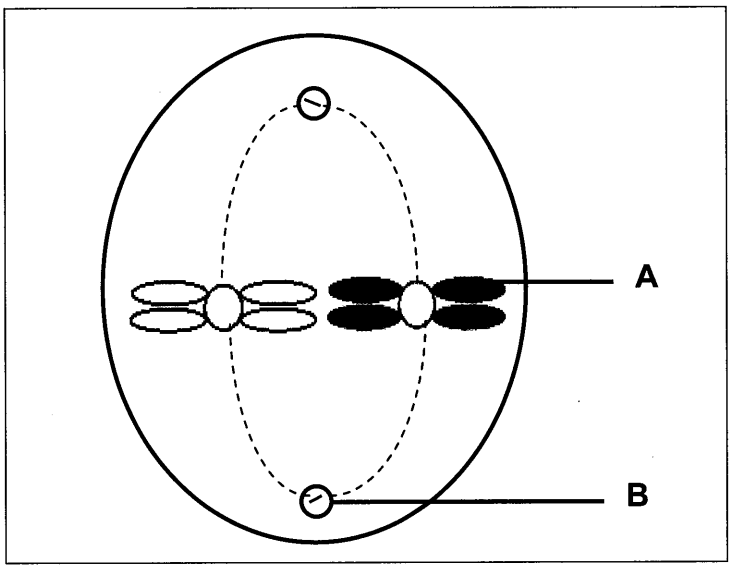
3.1.2 State TWO factors that were kept constant during this investigation. (2)

3.1.3 Why was the white shirt **X** included in the investigation? (2)

3.1.4 Why was the investigation repeated five times? (1)

3.1.5 State a conclusion for this investigation. (2)
(9)

3.2 Study the diagram below showing the phase of mitosis.



3.2.1 Identify the phase shown in the diagram above. (1)

3.2.2 Give ONE visible reason for your answer in QUESTION 3.2.1. (1)

3.2.3 Identify part:

(a) **A** (1)

(b) **B** (2) (1)

3.2.4 How many:

(a) Chromatids are present in the cell shown above (1)

(b) Chromosomes will be present in each cell at the end of mitosis (1)

3.2.5 Give TWO biological importance mitosis. (2)

3.2.6 Draw a diagram of the cell in a phase that occurs after the one shown in the diagram above. (3)
(11)
[20]

TOTAL SECTION B: 40
GRAND TOTAL: 60

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MEMORANDUM

MARKS: 60

This memorandum consists of 4 pages

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SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	B✓✓		
	1.1.3	C✓✓		
	1.1.4	B✓✓	(4 x 2)	**(8)**
1.2	1.2.1	Cytokinesis✓		
	1.2.2	Lysosome✓		
	1.2.3	Iodine✓		
	1.2.4	Chlorophyll✓	(4 x 1)	**(4)**
1.3	1.3.1	None✓✓		
	1.3.2	A✓✓	(2 x 2)	**(4)**
1.4	1.4.1	Movement of any molecules✓ from a high concentration to a low concentration✓		
	1.4.2	Movement of water✓ molecules from a region of high to a region of low concentration through a differentially permeable membrane✓		
			(2 x 2)	**(4)**

TOTAL SECTION A: 20

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SECTION B

QUESTION 2

2.1 2.1.1 Plant cell✓ (1)

2.1.2 - Has cell wall✓
- Has Chloroplasts✓
- Has a large vacuole✓
Mark first THREE only (3)

2.1.3 (a) Cytoplasm✓ (1)
(b) Cell membrane✓/plasma membrane (1)

2.1.4 (a) D✓ (1)
(b) A✓ (1)

2.1.5 - It is selectively permeable✓
- to allow certain substances to pass through✓
Mark first ONE only (2)
(10)

2.2 2.2.1 (a) Potatoes✓ (1)

(b) Bananas✓ (1)

2.2.2 - Protein✓
- Fats✓
Mark first TWO only (2)

2.2.3 Amino acids✓ (1)

2.2.4 Biuret test✓ (1)
(6)

2.3 - Add a few drops of iodine solution✓ to the food- sample
- If the sample turns blue-black✓
- then it contains starch✓
- If the sample remains brown✓
- then starch is absent✓ Any **(4)**

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3.2 3.2.1 Metaphase✓

3.2.2 - Chromosomes arranged on the equator of the cell✓
- Chromosomes attached to the spindle fibres by its centromere✓
Any
Mark first ONE only (1)

3.2.3 (a) Chromatid✓ (1)
(b) Centrosome✓/centriole (1)

3.2.4 (a) 4✓ (1)
(b) 2✓ (1)

3.2.5 - Allows for growth ✓
- Replace and repair damaged cells or tissues ✓
- Produce identical cells to parent cells ✓
- For asexual reproduction in most unicellular organisms ✓ Any
(Mark first TWO only) (2)

3.2.6

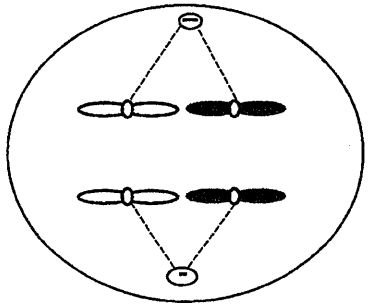


Diagram of a cell in anaphase

Marking criteria:

Caption	1
Correct type of diagram (4 chromatids)	1
Chromatids arrangement (shaded an unshaded one side)	1

(3)
(11)

TOTAL SECTION B: 40
GRAND TOTAL :60

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