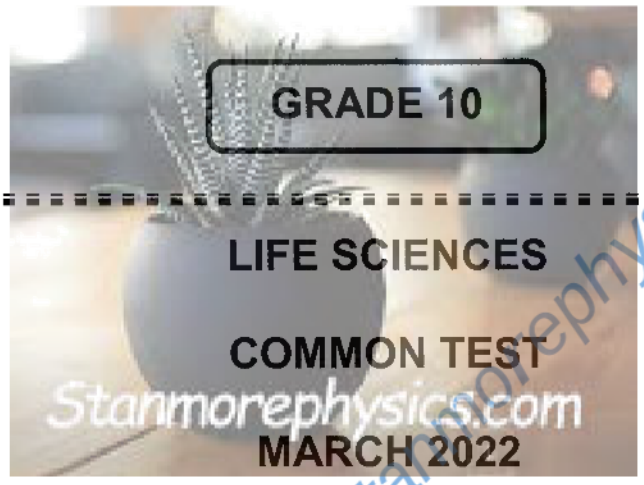
KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE



MARKS: 60

TIME: 1 hour

This question paper consists of 8 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 1.1.4) in your ANSWER BOOK, for example 1.1.4 D.

1.1.1 Which part of light microscope provide a source of light so that the object can be viewed?

A Stage
B Clip
C Diaphragm
D Mirror

1.1.2 Which of the following describes the behaviour of chromosomes during anaphase of mitosis?

A Chromosomes align themselves along the equator of the cell
B Each chromosome replicates and now has two chromatids
C Chromatids of each chromosome separate and are pulled to opposite poles of the cell
D Chromosome appear as a chromatin network

1.1.3 The organelles that synthesize proteins are called…

A Ribosomes
B Mitochondria
C Chloroplast
D Nucleoli

1.1.4 Which of the following is CORRECT about osmosis?

A Solutes moves from region of high concentration to low concentration.
B Particles moves from region of low concentration to high concentration.
C Water moves from high concentration area to low concentration area.
D Water moves from low concentration area to high concentration area.

(4x2) **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 Fats that are liquid at room temperature

1.2.2 The structure that holds two chromatids together

1.2.3 Membrane that surrounds a plant vacuole

1.2.4 Process by which molecules move from a region of high concentration to a region of low concentration 4x1 **(4)**

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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 1.3.4) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Contains the pigment/s in a plant cell	A: Chromoplast B: Chloroplast
1.3.2	Monomers of proteins	A: Fatty acids B: Amino acids
1.3.3	Lack of this vitamin/s causes rickets	A: Vitamin A B: Vitamin B
1.3.4	A model used to explain how enzymes function	A: Fluid mosaic model B: Lock and key model

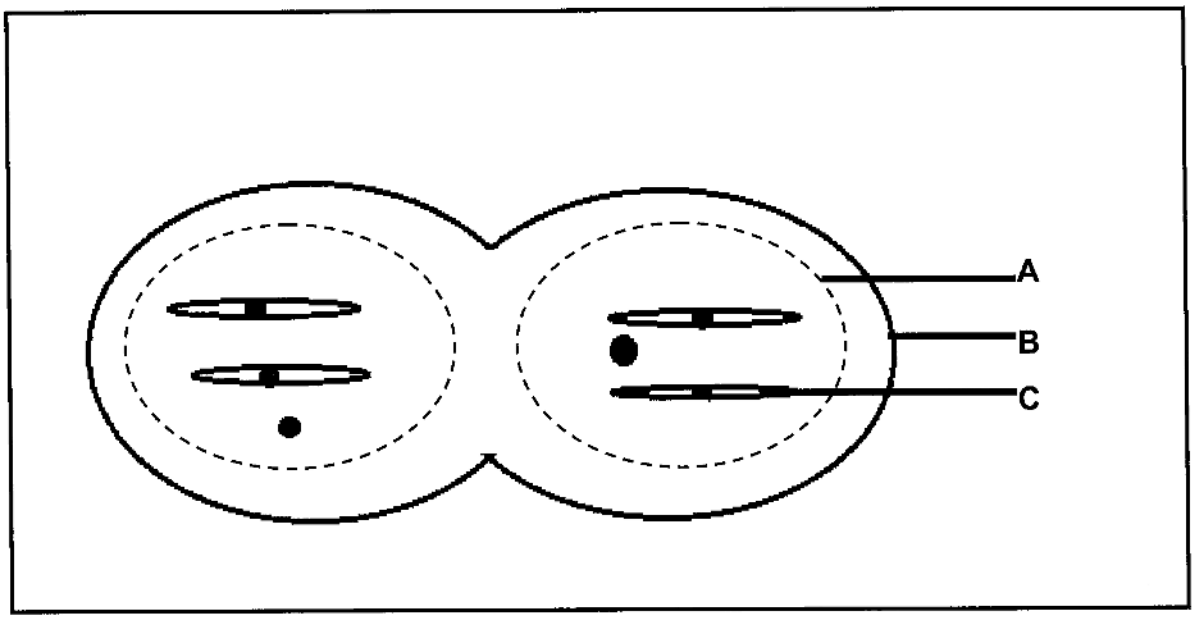
(4 x 2) **(8)**

TOTAL SECTION A: 20

SECTION B

QUESTION 2

2.1 Study the diagram below showing a phase of mitosis.



2.1.1 Identify parts **B** and **C** respectively. (2)

2.1.2 State ONE function of part **A.** (1)

2.1.3 Identify the above diagram and give a reason for your answer. (2)

2.1.4 How many chromosomes were present at the beginning of this cell division? (1)

2.1.5 Write down ONE visible feature in the diagram that shows the phase of mitosis is taking place in an animal cell. (1)

2.1.6 Explain the significance of DNA replication during interphase. (2)
(9)

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2.2 An investigation was carried out to determine the effect of pH on enzyme activity,

The results of the investigation are shown in the table below

pH	Enzyme activity (%)
6.0	3
6.5	20
7.0	60
7.5	98
8.0	40
8.5	3
9.0	0

2.2.1 What is the optimum pH for functioning of this enzyme? (1)

2.2.2 Identify the:
(a) dependent variable
(b) independent variable (2)

2.2.3 Use the information provided on the table to draw a line graph to present the results of the investigation. (6)

2.2.4 List TWO ways in which the reliability of this investigation could be increased.

(2)

(11)

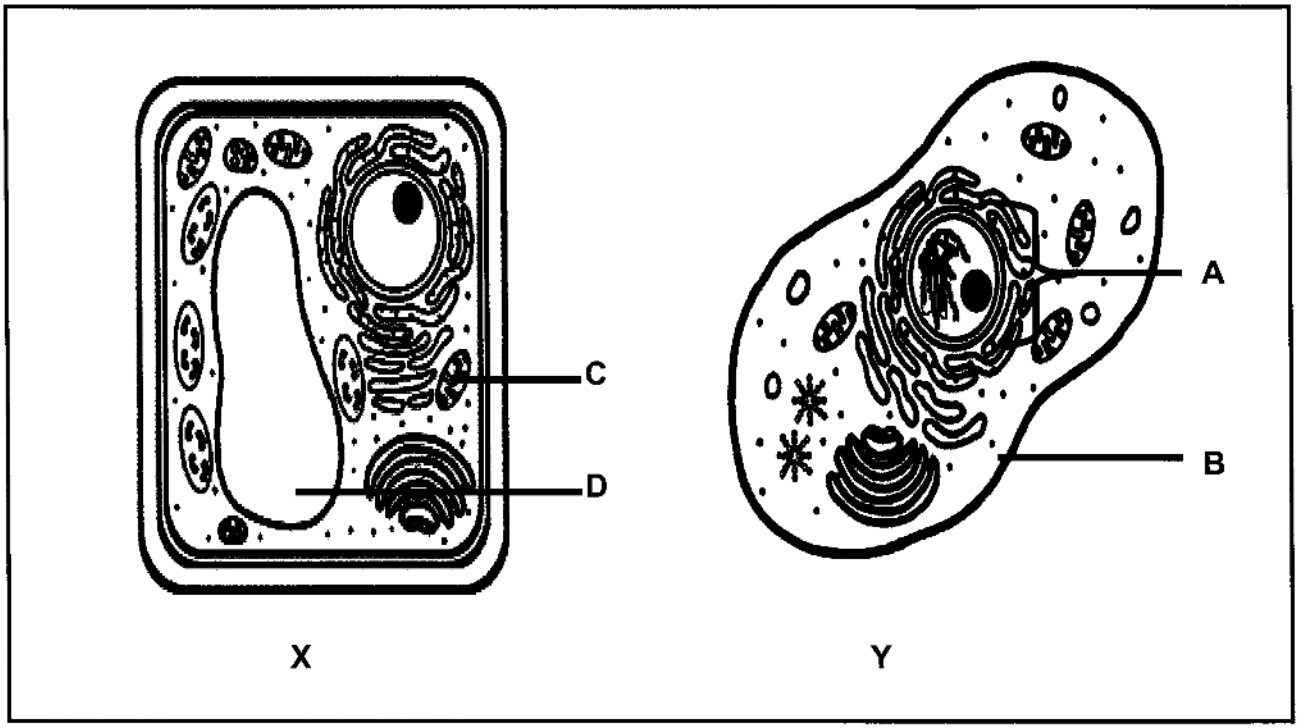
TOTAL QUESTION 2 (20)

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QUESTION 3

3.1 Diagrams below show two types of cells.



3.1.1 Which structure (**X** or **Y**) represent plant cell? (1)

3.1.2 Provide TWO visible reasons for your answer in QUESTION 3.1.1 (2)

3.1.3 Name the type of nucleic acid found at A (1)

3.1.4 Write ONLY the letter of the part that is the site for cellular respiration (1)

3.1.5 Explain what will happen to the cell if part **B** becomes impermeable (4)

3.1.6 Describe the events that will result in a cell if part **D** loses too much water (2)

(11)

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3.2 Study the micrograph of a cell organelle below. It was viewed under an eye piece of 10x and objective lenses of 40x.



3.2.1 Identify the above diagram. (1)

3.2.2 Calculate the total magnification of this micrograph. (2)
(3)

3.3 Proteins and carbohydrates are essential organic compounds in a human body need. A shortage on these compounds can cause serious illness.

3.3.1 Give TWO elements found in both proteins and carbohydrates. (2)

3.3.2 Describe the importance of proteins in a human body. (4)

(6)

TOTAL QUESTION 3 : (20)

TOTAL SECTION B: (40)
GRAND TOTAL: [60]

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