2024.M43

2024L025G1EL

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2024

Biology

Sections A and B and Answerbook

Ordinary Level

Tuesday 11 June Afternoon 2:00 - 5:00

400 marks

Examination Number

Date of Birth

For example, 3rd February 2005 is entered as 03 02 05

Centre Stamp

Instructions

Write your Examination Number and your Date of Birth in the boxes on the front cover.

Write your answers to all parts of the examination into this answerbook. This answerbook will be scanned and your work will be presented to an examiner on screen. Anything that you write outside of the answer areas may not be seen by the examiner.

Write your answers in blue or black pen. You may use a pencil for sketches, graphs and diagrams only.

There are three sections to this examination. Questions for Section **C** are supplied separately but your answers must be written in this answerbook.

It is recommended that you spend not more than 30 minutes on Section **A** and 30 minutes on Section **B**, leaving 120 minutes for Section **C**.

Section **A**	Answer any **five** questions from this section. Each question carries 20 marks.
Section **B**	Answer any **two** questions from this section. Each question carries 30 marks.
Section **C**	Answer any **four** questions from this section. Each question carries 60 marks.

Section A

Answer any five questions.
Write your answers in the spaces provided.

1. Use your knowledge of nutrition to answer the following questions.

(a) Why is food required by **all** living organisms?

(b) Carbon, hydrogen, oxygen and **one** other element are **always** present in proteins.
Name the **other** element.

(c) Give **one** source of protein in the diet.

(d) Which of the following is a **structural** role of protein in living organisms?
Put a tick (✓) in the correct box.

Component of hair and nails ☐

Takes part in enzyme reactions ☐

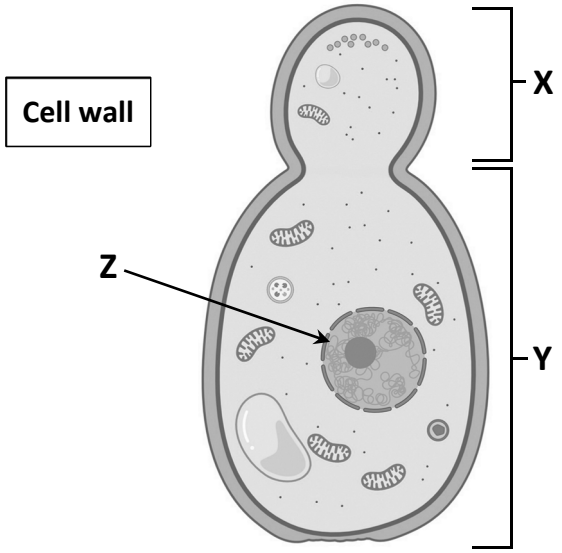
(e) Which one of the following terms is the **smallest** unit of a protein?
Put a tick (✓) in the correct box.

Monosaccharide ☐

Amino acid ☐

Triglyceride ☐

2. The diagram shows a yeast cell budding.



(a) Is yeast a unicellular or multicellular organism?
Put a tick (✓) in the correct box.

Unicellular ☐

Multicellular ☐

(b) What is the reason for budding in yeast?
Put a tick (✓) in the correct box.

Respiration ☐

Excretion ☐

Reproduction ☐

(c) Which part of the yeast cell (**X** or **Y**) is the bud?
Put a tick (✓) in the correct box.

X ☐

Y ☐

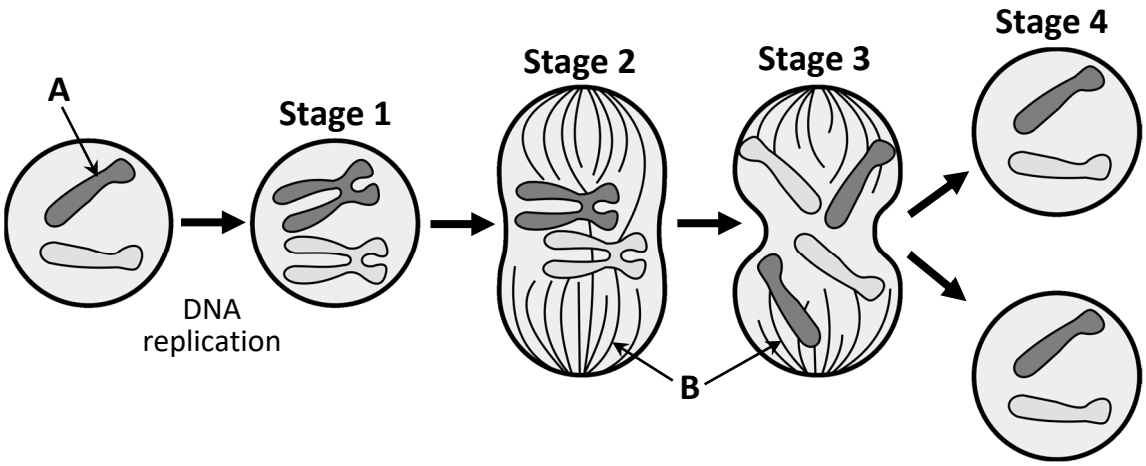
(d) Briefly describe what happens to the bud.

(e) What is the name of the organelle labelled **Z**?

(f) **On the diagram above**, draw an arrow from the label '**Cell wall**' to the location of the cell wall in the yeast cell.

(g) Yeast is a member of which kingdom?

3. The diagram shows DNA replication followed by mitosis.



(a) Structure **A** is made of DNA and protein. Name structure **A**.

(b) Structure **B** is shown during **Stage 2** and **Stage 3** of mitosis. Name structure **B**.

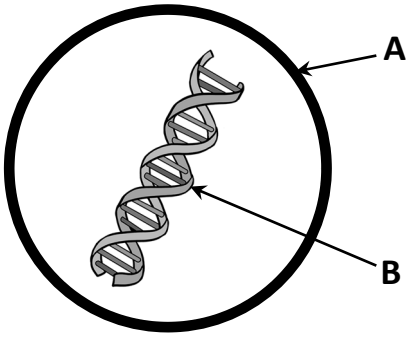
(c) Briefly describe what is happening during **Stage 2** of mitosis.

(d) Briefly describe what is happening during **Stage 3** of mitosis.

(e) How many daughter cells result from mitosis?

(f) What is the function of mitosis in multicellular organisms?

4. The diagram shows the basic structure of a virus.



(a) Name the **two** main components (**A** and **B**) of a virus.

A:
B:

(b) Give **one** example of a harmful virus.

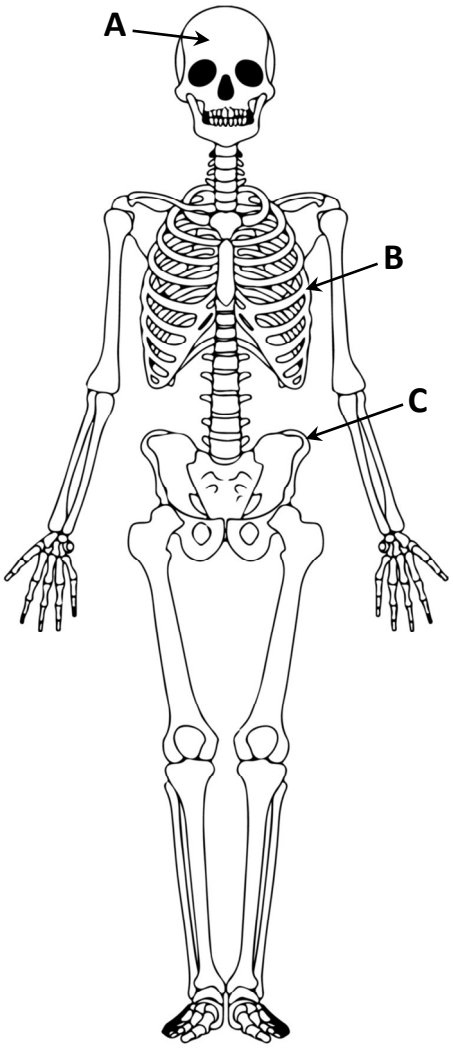
(c) Give an example of how viruses might be beneficial.

(d) Which of the following sentences describes how viruses replicate?
Put a tick (✓) in the correct box.

Viruses replicate outside of living cells. ☐

Viruses replicate within living cells. ☐

5. The diagram shows the human skeleton.



(a) Give **two** functions of the skeleton.

1.
2.

(b) Name the parts of the skeleton labelled **A**, **B** and **C**.

A:
B:
C:

(c) Which of the following types of joint is located between the bones of part **A**?
Put a tick (✓) in the correct box.

Immovable ☐

Slightly movable ☐

Free moving or synovial ☐

(d) Which of the following types of joint describes a hinge or ball and socket joint?
Put a tick (✓) in the correct box.

Immovable ☐

Slightly movable ☐

Free moving or synovial ☐

6. State whether each of the following statements is true or false by putting a tick (✓) in the appropriate box in **each** case.

	True	False
Example:		
Turgor is the pressure of the cell contents against the cell wall.	☑	☐
(a) The stage of a light microscope holds the slide.	☐	☐
(b) Protein synthesis occurs on the ribosome.	☐	☐
(c) Animal cells have cell walls.	☐	☐
(d) A tissue is a group of organs.	☐	☐
(e) Immobilised enzymes can be reused.	☐	☐
(f) Osmosis is a special case of diffusion.	☐	☐
(g) Cell membranes are fully permeable.	☐	☐

7. Choose **each** term from the following list and place it in Column B to match a description in Column A. The first one has been completed as an example.

~~Safety~~ **Hypothesis** **Data** **Control** **Theory** **Experiment**

Column A		Column B
	Principle of experimentation	**Safety**
(a)	Possible explanation for an observation	
(b)	Used to test a hypothesis	
(c)	Comparison to a test	
(d)	Information and measurements collected during an investigation	
(e)	Supported hypothesis	

Section B

Answer any two questions.
Write your answers in the spaces provided.
Part (a) carries 6 marks and part (b) carries 24 marks in each question in this section.

8. **(a)** **(i)** Define the term *habitat*.

(ii) What did you use to identify fauna and flora in your habitat study?

(b) As part of your habitat study, you will have investigated three abiotic factors.

(i) Name the **three** abiotic factors you studied **and** briefly state how you measured **each** of them; e.g. state the apparatus you may have used.

You will have also used various pieces of apparatus for collecting organisms in your habitat study.

(ii) Name **two** pieces of collection apparatus **or** name **two** methods you used to collect organisms as part of your habitat study.

9. **(a)** **(i)** Define the term *enzyme*.

(ii) Name a factor, other than temperature, that affects enzyme activity.

(b) Answer the following questions based on an activity you carried out to investigate the effect of **temperature** on the **rate of activity** of an enzyme.

(i) Write down the enzyme you used from the list below **and** give the substrate of this enzyme. List: **Amylase**; **Pepsin**; **Catalase**.

Enzyme:
Substrate:

(ii) Briefly describe how you prepared the enzyme.

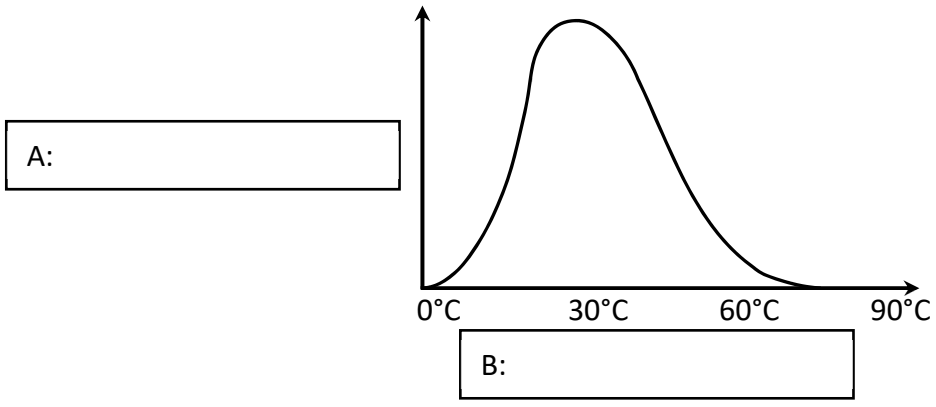
(iii) How did you vary the temperature?

(iv) Name a factor that you kept constant during the activity.

(v) How was the factor named in part (b) (iv) above kept constant?

(vi) Give a safety precaution you took during the activity.

(vii) A graph similar to the one shown below was plotted from the results of this investigation. Using the terms **Temperature** and **Rate** label axes **A** and **B**.



10. **(a)** Give **two** factors, other than exercise, that have an effect on the circulatory system.

1.
2.

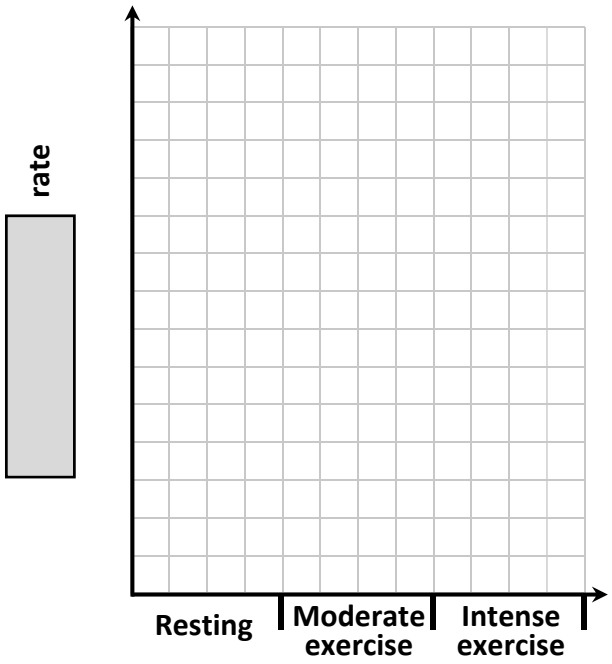
(b) A student investigated the effect of three minutes of moderate exercise and three minutes of intense exercise on pulse rate (**PR**) and breathing rate (**BR**). She repeated the investigation three times and calculated average data for **PR** and **BR**.

(i) Describe how the student measured resting **PR or** resting **BR**.

(ii) The student's average results are shown in the table below.

	PR	BR
Resting	60	20
Moderate exercise	100	30
Intense exercise	150	60

Choosing **either** pulse **or** breathing rate, complete the name of the y-axis **and** on the grid provided, draw (using pencil) a suitable graph to represent the data of **either** pulse rate (**PR**) **or** breathing rate (**BR**).



(iii) State what would happen to the **PR or BR** after exercise has stopped.

(iv) Suggest a reason for the student repeating the investigation three times.

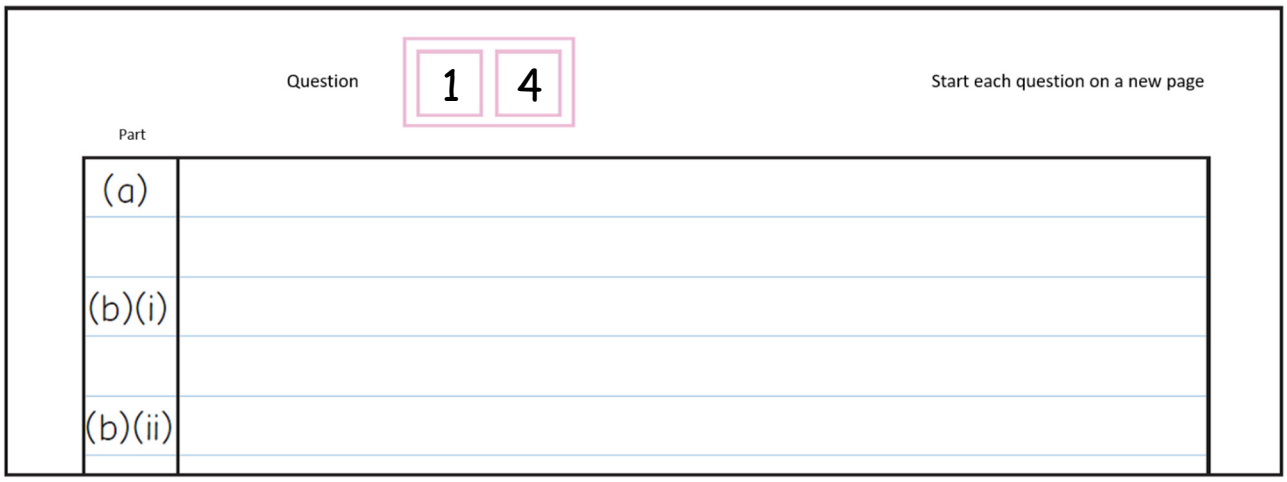
(v) Describe a safety precaution the student would have taken.

Answerbook for Section C

Instructions

Questions for Section **C** are supplied separately.

Start each question on a new page. Write the question number in the box at the top of each page. Use the left-hand column to label each part, as shown below.



There are two pages of graph paper on the next two pages of this answerbook. On pages with graph paper, the box for the question number is at the bottom of the page.

You do not need to use all of the pages in this answerbook. If you run out of space in this answerbook, you may ask the superintendent for more paper or graph paper.

Write your answers in blue or black pen. You may use a pencil for sketches, graphs and diagrams only.

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Tuesday 11 June

Afternoon 2:00 - 5:00