

P530/2  
BIOLOGY  
Paper 2  
(Theory)  
Nov./Dec.2024  
2½ hours



UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

BIOLOGY

Paper 2  
(Theory)

2 hours 30 minutes

**INSTRUCTIONS TO CANDIDATES:**

*This paper consists of two Sections; A and B. It has six questions.*

*Section A is compulsory.*

*Answer any three questions from Section B.*

*Answer four questions in all.*

*Any additional question(s) answered will not be marked.*

*Begin answering each question on a fresh page.*

*You are advised to read the questions carefully, organise your answers and present them precisely and logically, illustrating with well labelled diagrams where necessary.*

## SECTION A (40 MARKS)

1. Figure 1 shows the changes in the concentration of two growth hormones, abscisic acid and gibberellic acid in germinating apple seeds maintained at 25 °C after a period of cold treatment. Figure 2 shows the percentage of apple seeds that germinated under the same conditions.

Study the two figures and answer the questions that follow.

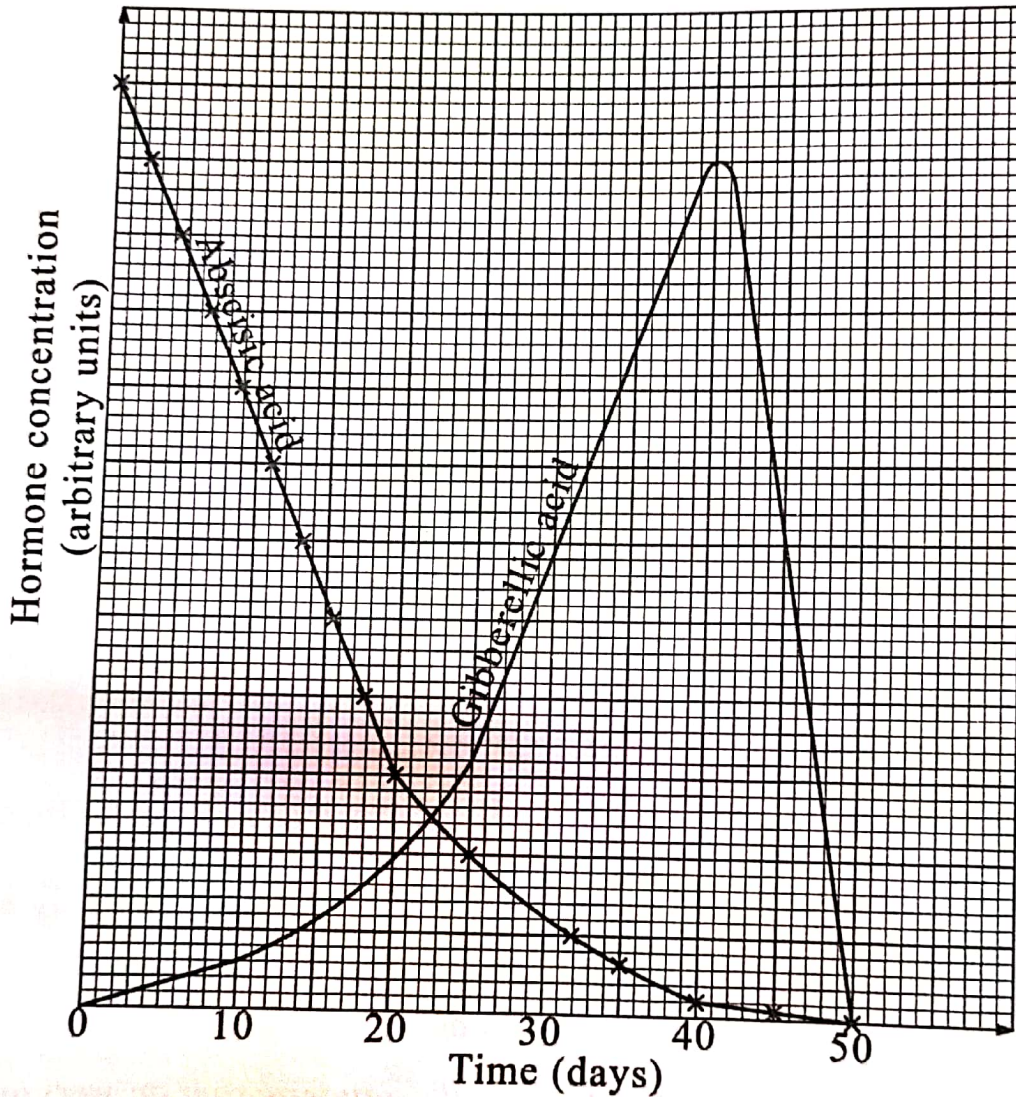
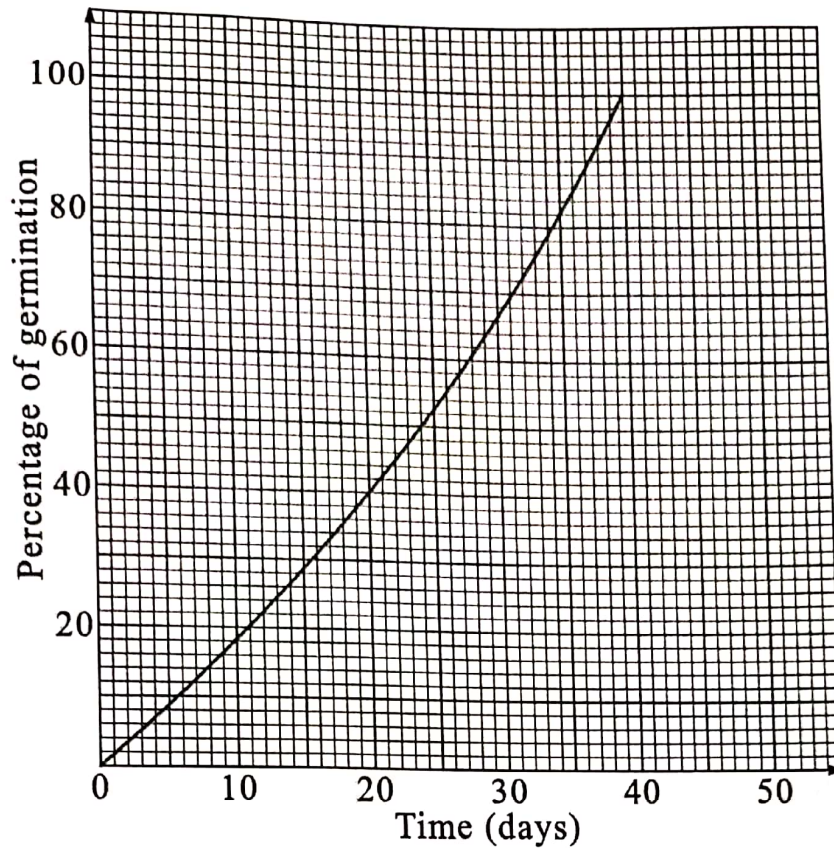


Fig. 1



**Fig. 2**

- (a) From figure 1, describe the changes in the concentration of;
- abscisic acid. (03 marks)
  - gibberellic acid. (05 marks)
- (b) From figure 1, explain the changes in the concentration of;
- abscisic acid. (05 marks)
  - gibberellic acid. (05 marks)
- (c) Explain how the concentration of;
- abscisic acid in figure 1 relates to the percentage of seeds that germinated in figure 2. (05 marks)
  - gibberellic acid in figure 1 relates to the percentage of seeds that germinated in figure 2. (05 marks)
- (d) Explain the significance of cold treatment of seeds before planting. (03 marks)

- (e) Explain why a seed may remain dormant after dispersal even when the environmental conditions are favourable for germination. (04 marks)
- (f) State the ecological significance of dormancy in seeds soon after dispersal. (02 marks)
- (g) State **three** applications of plant growth hormones. (03 marks)

### SECTION B (60 MARKS)

*Answer any **three** questions from this section.  
Any additional question(s) answered will **not** be marked.*

- 2. (a) How is the structure of a mitochondrion suited for its function? (12 marks)
- (b) How is ATP produced from NAD in the mitochondrion? (08 marks)
- 3. (a) Describe the life cycle of the common moss. (16 marks)
- (b) State any **four** problems faced by terrestrial plants. (04 marks)
- 4. (a) How is the structure of the retina of a mammalian eye suited for its function? (11 marks)
- (b) Outline the differences between the structure and function of the mammalian rods and cones. (09 marks)
- 5. (a) Compare gaseous exchange and ventilation mechanism in bony fish and cartilaginous fish. (12 marks)
- (b) Describe the control of breathing in mammals. (08 marks)
- 6. (a) Describe the structure of a chloroplast. (07 marks)
- (b) Outline the process of sucrose synthesis in C<sub>4</sub> plants. (07 marks)
- (c) Explain how temperature and altitude influence the distribution of C<sub>3</sub> and C<sub>4</sub> plants. (06 marks)