

P530/2  
BIOLOGY  
(Theory)  
Paper 2  
AUGUST, 2022  
2½ hours



**JINJA JOINT EXAMINATIONS BOARD**  
*Uganda Advanced Certificate of Education*  
**MOCK EXAMINATIONS – AUGUST, 2022**

**BIOLOGY**

**(THEORY)**

**Paper 2**

**2 hours 30 minutes**

**INSTRUCTIONS TO CANDIDATES**

*Answer question ONE in section A plus three others from section B.*

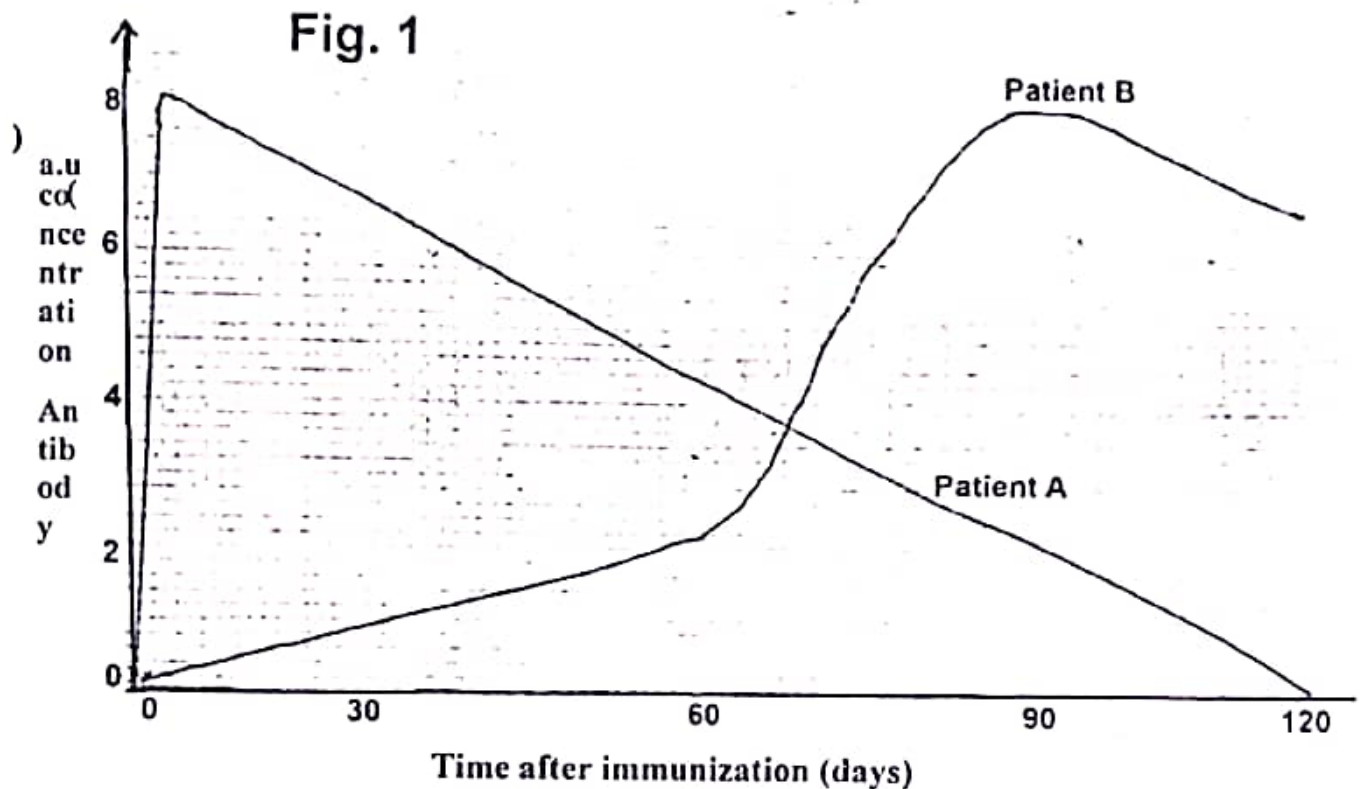
*Candidates are advised to read questions carefully, organize their answers and present them precisely and logically.*

*Illustrate, whenever necessary, with well labelled diagrams.*

## SECTION A (40MARKS)

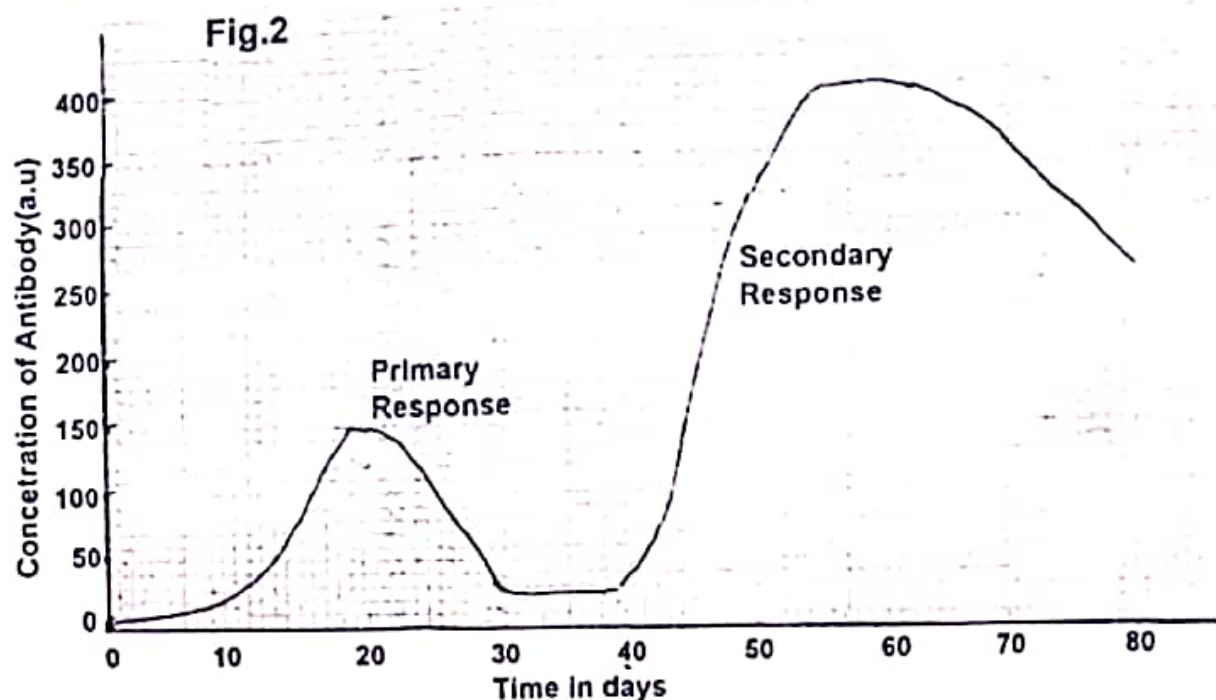
1. (a). The graph below in **Figure 1** below shows how the concentration of the antibody varied in each of the two patients after immunizing them with different vaccine against a pathogenic microbe.

Fig 1



- Describe the variation of the antibody concentration with time in the patients immediately after their immunization. (07marks)
  - Explain the differences in the way antibody concentration changed immediately after the immunization of the patients. (12 marks)
  - Discuss the advantages of immunizing the infected individuals using the vaccines administered to each of patient A and patient B (07 marks)
- (b). The graph in **Figure 2** shows how the antibody concentration varies with time in

days in the first and second infections by the same pathogens.



- Explain the differences in the response to infections by the same pathogens indicated in fig 2. above. (06Mark)
- Describe how the antibodies produced in response to infections may destroy the pathogens. (04 marks)
- Suggest why it is advantageous to be exposed to mild infections of the pathogenic microbes such as corona virus. (04marks)

### SECTION B (60MARKS)

- Explain the evolutionary significance of the processes that bring pollens and stigma together in terrestrial flowering plant species. (08marks)
  - Outline structural and physiological features of flowering plants that eliminate the disadvantages of inbreeding in crops. (06marks)
  - Suggest why farmers would prefer using seeds in crop propagation over other planting materials. (06marks)
- What is meant by
    - Species (02marks)
    - Species extinctions and (01 Mark)
    - Pests resurgence? (01 marks)

- (b). (i). Outline human activities that may lead to extinction of the species. (04marks)  
 (ii). Explain how man has contributed to the formation of new species. (06marks)
- (c). Describe the evolutionary effects of the following.  
 (i). Predation (03 marks)  
 (ii). Migration (03 marks)
4. (a). Describe how the epithelial tissue is suited for the function of.  
 (i). Protection (04marks)  
 (ii). Gaseous exchanged and absorption of food. (08marks)
- (b). How are the requirements for efficient gaseous exchange fulfilled in the mammalian lungs and gills in fish? (08marks)
5. Explain what is meant by genetic disorder. (02marks)
- (b) Explain how a small difference in the base sequence of DNA can lead to a large difference in the structure of a protein produced such as hemoglobin (06marks)
- (c). (i). If two people with sickle cell trait marry, what are the chances that their first child will have sickle cell anaemia? (06marks)  
 (ii). Explain why despite of strong selection pressure against people with sickle cell anaemia, the sickle allele is not easily eliminated in human populations. (06marks)
6. (a). State the functions of water absorbed into plants. (04marks)
- (b). Explain  
 (i). the ways in which the soil temperature and humidity of air surrounding leaves affect absorption by the roots. (05marks)  
 (ii). how the leaf structure is suited for transpiration? (06marks)
- (c). Compare transpiration and sweating in mammals. (05marks)