

GREENHILL ACADEMY
S.6 HOLIDAY WORK TERM 1 2025
BIOLOGY THEORY

INSTRUCTIONS TO CANDIDATES

- This paper consists of two sections; A and B
- Answer one question in section A plus three others from section B
- Candidates are advised to do thoroughly research, carefully organize their answers and illustrate with diagrams where necessary

FOR EXAMINER'S USE ONLY

QUESTION	MARKS
1	
2	
3	
4	

SECTION A (40 MARKS)

In an investigation, a yeast culture containing initially 18000cm^3 and a supply of glucose was setup in a laboratory fermenter, which was placed in a water bath maintained at 35°C . The changes in glucose concentration and population density of yeast cells was estimated at intervals during the experiment
Figure 1 shows the results obtained.

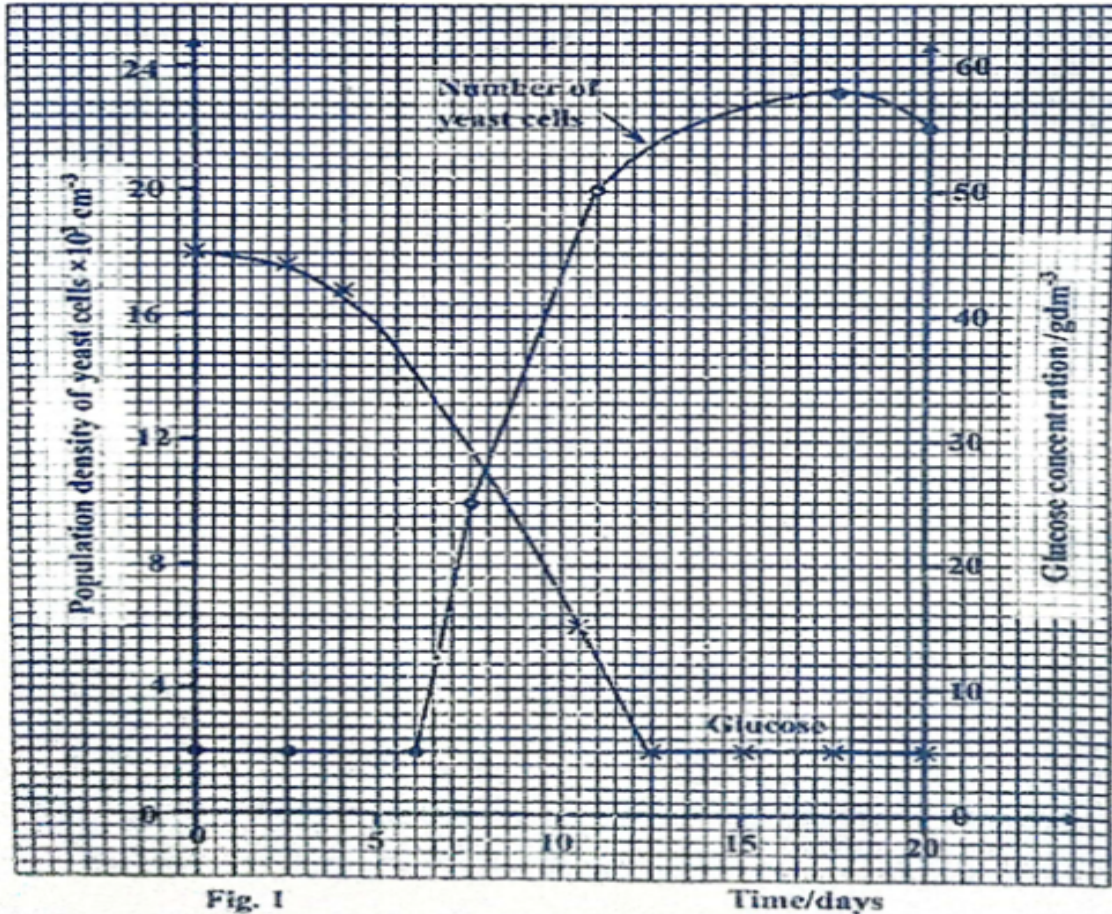


Fig. 1

Time/days

- (a) Describe the variation of;
- (i) Population density of yeast cells with time (04 marks)
 - (ii) Glucose concentration with time (03 marks)
- (b) Explain the trend of population density of yeast cells between;
- (i) 0 and 6 hours (06 marks)
 - (ii) 6 and 12 hours (06 marks)
- (c) Explain the relationship between glucose concentration and population density of yeast cells (08 marks)

- (d) (i) Calculate the percentage of glucose that remained at the end of the experiment. (03 marks)
- (ii) Suggest an explanation for the presence of some glucose at the end of the experiment (08 marks)
- (e) Explain why the temperature of the water bath was maintained at 35°C during the experiment (04 marks)

SECTION B

*(Attempt only **three** questions from this section)*

- 2.(a) Describe the reproductive features of flowering plants that have contributed to their evolutionary success (08 marks)
- (b) How does light contribute to the synthesis of lipids in plants? (12 marks)
- 3(a) (a) Explain how plants that live in salt marshes are able to survive plasmolysis. (10 marks)
- (b) Explain the effect of water logging on each of the following.
- (i) Water uptake by plant roots. (06marks)
- (ii) Nitrogen content of the soil. (04marks)
- 4(a) Describe the evidence of evolution based on paleontology. (9 marks)
- (b) Explain how the following may lead to evolution of new species;
- (i) Selective breeding (5 marks)
- (ii) Habitat modification. (6 marks)

“The start is what stops most people”

END