

P530/2
BIOLOGY
PAPER 2
2½ hours
March/April 2025



UGANDA ADVANCED CERTIFICATE OF EDUCATION

PRE-REGISTRATION EXAMINATIONS 2025

BIOLOGY

P530/2(THEORY)

TIME: 2HOURS 30MINUTES

INSTRUCTIONS TO CANDIDATES:

- ✓ Answer question one in section **A** plus three others from section **B**.
- ✓ Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labeled diagrams where ever necessary.
- ✓ Write on the answer sheet, your name, index number and the questions attempted in their order in the table below.

QUESTION	MARKS
TOTAL	

TURN OVER

SECTION A (40 MARKS)

(Compulsory)

1. (a) A team of scientists worked with the fusion yeast, Schizosaccaromyces pombe. They identified a gene in the yeast whose product of translation is a protein kinase in cells of the yeast as the cell cycle progressed. At each concentration of kinase, they determined the percentage of dividing cells. Their results are given in figure A below.

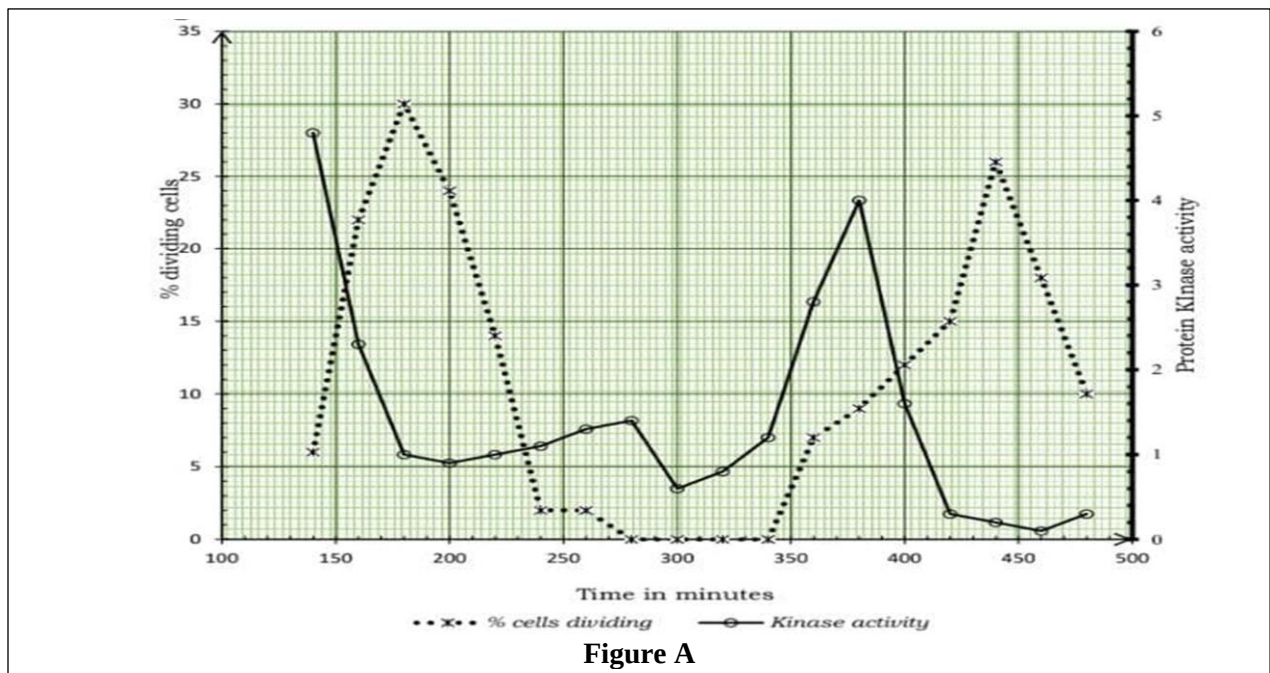


Figure A

- Compare the changes in concentration of protein kinase and percentage of dividing cells with time. (10marks)
- What conclusion(s) can you draw from the observed changes in concentration of kinases and percentage of dividing cells? (06marks)
- According to the graph what is the significance of interphase in regulation of cell cycles? (07marks)

(b) A study was carried out to determine the distance between the centromeres of the chromosomes and poles of the cell, and the distance between centromeres of sister chromatids. The results are shown on the graph of figure B below.

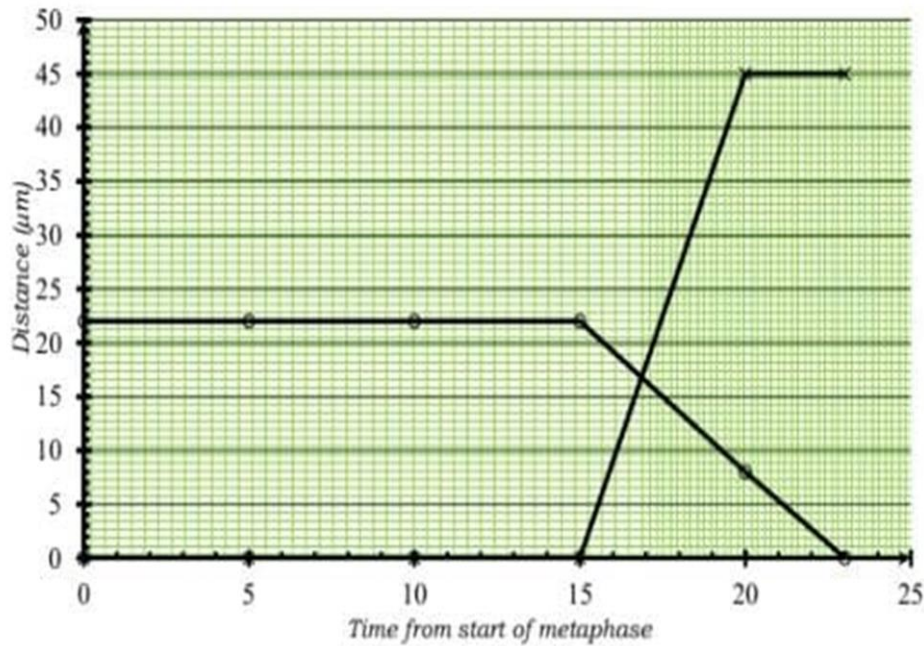


Figure B

- I. Identify each of the curves above. (04marks)
- II. Give an explanation for each of the graphs you have identified. (13marks)

SECTION B (60 MARKS)

2. (a) Describe the generalized structure of the retina. (10marks)
(b) Explain the significance of the compactness of cones at the fovea. (10marks)
3. (a) Compare respiration and photo respiration. (10marks)
(b) Explain how the respiratory compound lipids enter the Kreb's cycle in the cells of living organisms. (10marks)
4. (a) Describe the different mechanisms employed by mammals to increase their chances of fertilization and survival. (16marks)
(b) How does territorial behavior contribute to the evolutionary success of species? (04marks)
5. (a) Describe the sequence of events that may lead to eutrophication of a previously non polluted water body (10marks)
(b) Account for the difference in the efficiency of energy transfer at the different stages of transfer in an eco-system. (10marks)
6. (a) Describe how structure is related to function for the phloem. (10marks)
(b) Describe precisely phloem loading and unloading. (10marks)

END