P530/2 BIOLOGY (Theory) Paper 2 AUGUST, 2024 2\frac{1}{2} hours



JINJA JOINT EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

MOCK EXAMINATIONS - AUGUST, 2024

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.

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SECTION A (40MARKS)

1. A study was carried out on a typical C4 plant kept in conditions of constant light intensity and temperature while water supply was varied. Changes in the water potential, concentration of abscissic acid and stomatal resistance were recorded over time. Study the figure 1 below and answer the questions that follow.

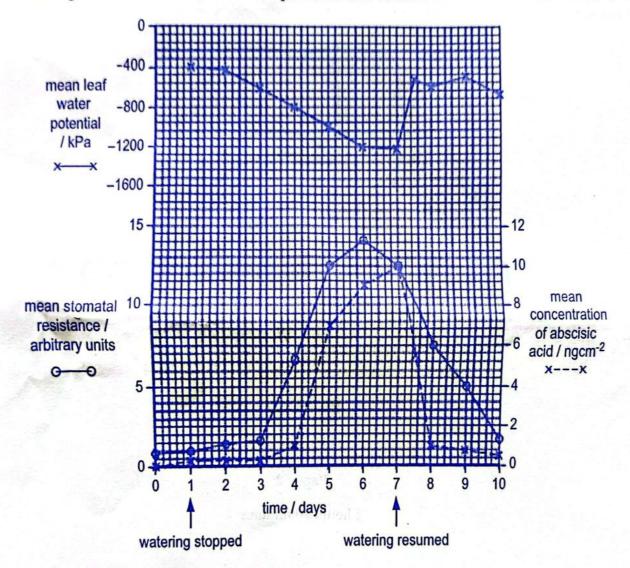


Figure 1

- (a) Describe the variation in the;
 (i) Mean leaf water potential (04 marks)

 (ii) Mean concentration of abscissic acid. (04 marks)

 (iii) Mean stomatal resistance. (04 marks)
- (b) Explain the relationship between water potential, abscissic acid and stomatal resistance. (10 marks)

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		_		
	(c)	Sug	gest what would be the effect of extreme light intensity and perimental results from the beginning of the experiment.	(06 marks)
	(d)		plain;	
	(i)		he ecological significance of the changes described in (c) al	pove to a C4 plant
		gre	owing in dry areas.	(04 marks)
	(ii)	Hov	w increase in stomatal resistance can affect photosynthetic e	efficiency of the
			ve plant.	(03 marks)
	(e)	Hov	v is transpiration important in plants?	(04 marks)
			SECTION B: (60 MARKS)	
2.	(a)	Des	cribe the interactions of various species of organisms in an	ecosystem.
				(08 marks
	(b)	Expla	in the ecological significance of each of the following com	ponents of an
		(i)	Parasitism.	(04 marks)
		(ii)	Competition.	(04 marks)
	(c)	Exp	lain how direct competition between different species of org	ganisms is
	(0)	redu		(04 marks)
3.	(a)	Expl	lain how the human body responds to a change in the air ter	nperature
	()	from	30°c to 20°c	(06 marks)
	(b)	Desc	cribe the functioning of the counter current exchange mech	anism in terrestrial
	. ,	mam	mals that permit water conservation.	(08 marks)
	(c)	Com	pare hair pin counter current multiplier and counter curren	t heat exchange
		syste		(06 marks)
1.	(a)	Desc	ribe what happens to the end product of glycolysis during;	
••	(4)	(i)	Lactate fermentation.	(04 marks)
		(ii)	Alcohol fermentation.	(06 marks)
b)	Descr	tha the	significance of Kreb's cycle.	05 marks)
0)	(c)	How	is oxidative phosphorylation different from photophosphory	rylation?
	(0)			(05 marks
5.	(a) Ex	colain	how each of the following affect allele frequency of a popul	lation. (04 marks)
٠.	(a) D.	(i)	Genetic load.	(04 marks)
		(ii)	Natural selection.	(04 marks)
		(iii)	Gene flow.	(0.11111110)
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(b) In drosophila, the genes for wing length and eye colours are sex linked.

Normal wings and red eyes are dominant to miniature wing and white eyes. In a cross between a miniature wing and red eyed male and a normal winged white eyed female. Explain the F1 and F2 generations assuming there was complete linkage.

(08 marks)

(a) Compare nervous and endocrine system.

(08 marks)

(b) Describe how the secretion of the following hormones is controlled.

(i) Thyroxine.

(06 marks)

(ii) Aldosterone.

(06 marks)

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