BSJE JOINT EXAMINATION

- 2024 -

Kenya Certificate of Secondary Education

231/2 **BIOLOGY** **PAPER 2**

June, 2024 **TIME: 2½ Hrs**

Name: …… Admission No: ……

Stream: …….. Signature: ……..

CODE - SUBJECT
Monday, 3rd June, 2024
Afternoon
2.00-4.30pm

Instructions

(a) Write your ***name, admission number, date, stream and signature*** *in the spaces provided above.*

(b) All answers must be written in the spaces provided in the booklet.

(c) This paper consists of 18 printed pages with 25 questions. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing

(d) Candidate should answer the questions in ***English***

FOR EXAMINERS'USE ONLY

Section	Questions	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	

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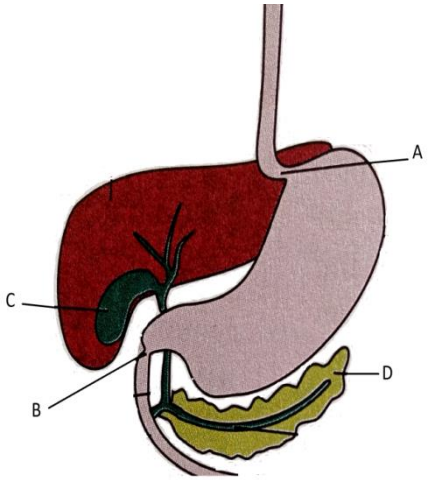
B	8	20	
Total Score		**80**	

SECTION A (40 marks)

Answer all the questions in this section in the space provided

1. The diagram below represents the digestive system of man and the associated organs



a) Identify structure labeled C. (1 marks)

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b) What is the significance of the structure labelled C above (2 marks)

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c) Explain digestive and hormonal function of structure labelled D (4 marks)

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d) State significance of structures labelled A (1 marks)

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2. a) What characteristics do gills of fish and mouth cavity of frog have in common that enable them to be efficient in gaseous exchange. (3 marks)

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b)Describe the change that occur to the rib cage and the diaphragm during inspiration

(3marks)

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a) Why is it advisable to breath in through the nostrils and not mouth (2 marks)

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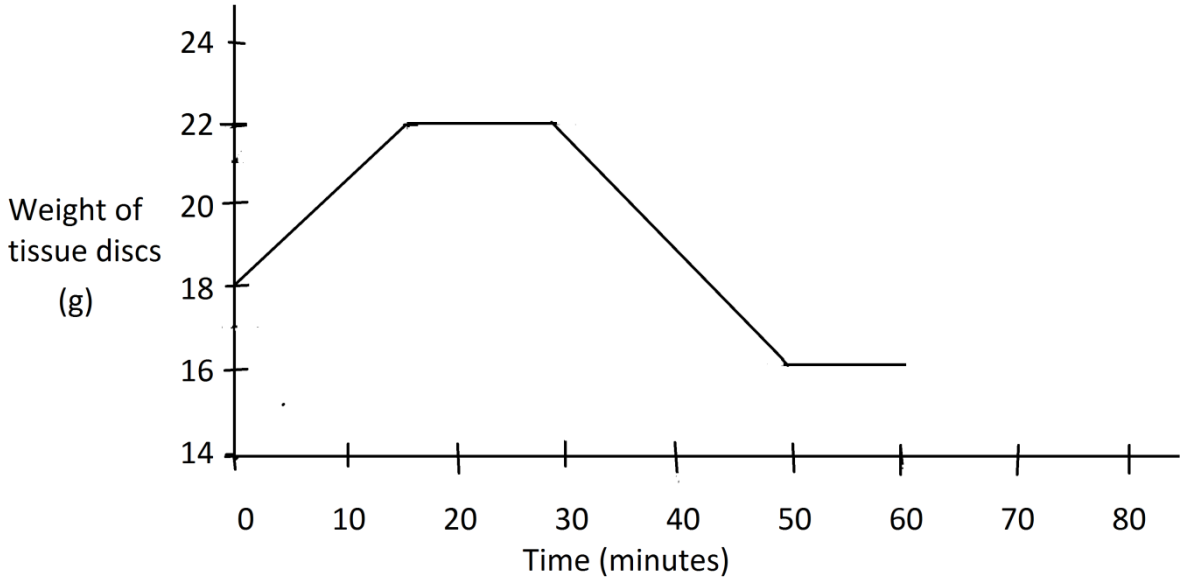
3. In an experiment, some discs cut from living potato tuber tissue were placed in distilled

water for 30minutes the discs were then placed in concentrated sucrose solution for another 30minutes.

- At regular intervals of time the discs were out of the liquid ,dried, weighed and replaced in the liquid
- The Results obtained from the experiment are as shown in the graph below



Explain the state of the cells of tissue discs at:

(i) A (2 marks)

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B (2 marks)

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(ii) Work out the change in weight between A and B (1marks)

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(iii) Name the process which brings about change C -D (1marks)

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(iv) Name the process which brings about the change in weight (1marks)

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(v) Why is it possible for this process to occur? (1marks)

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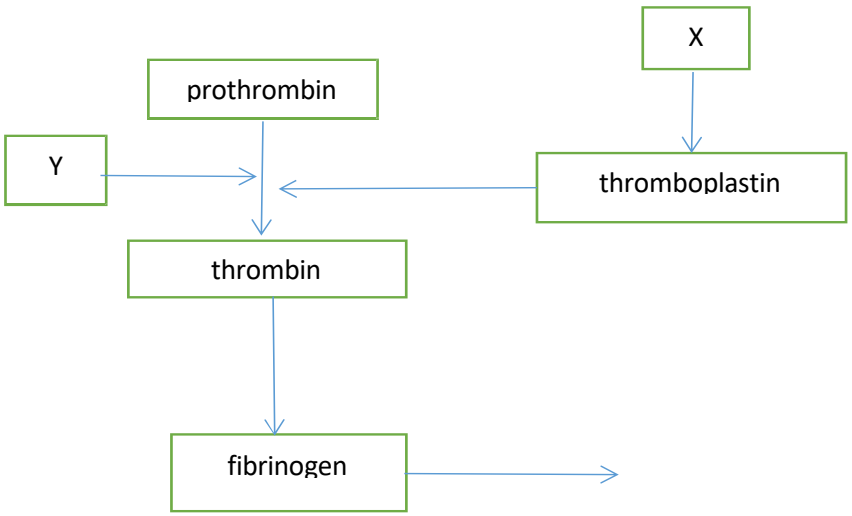
4. The chart below is a summary of the blood clotting mechanism in man



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(I) Name

(i) The blood cell X..... ……. (1marks)

(ii) Metal ion Y..... …… (1 marks)

(iii) End product of mechanism represented by Z. (1marks)

…..……

(II) Blood samples were taken from groups of people leaving at different altitudes and then numbers of red blood cells in each man of blood was calculated

-The results of this survey are as shown in the table below

Height above sea level	**Red blood cells(per mm^3 of blood)**
0	5,000,000
400	5,750,000
1500	6,500,000
1800	7,000,000
4400	8,000,000

Account for the number of red blood cells per altitude (3marks)

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(III) How does the skin prevent entry of micro-organisms into the body (1mark)

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(IV) Name the type of cells that destroy micro organisms in the human skin (1mark)

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5. When the offspring of pea plant having green pods and pea plant having yellow pods were crossed, they produced green pods and yellow pods in the ratio 3:1. Using letter G to represent the gene for green pods

(a) State genotype of:

(I) Parents ..... ….. (2marks)

(ii) F1 generation ..... (1marks)

(b) Work out the cross between plants in the F 1 generation (4 marks)

(c) Account for the colour of the pods in plants of the F 1 generation (1marks)

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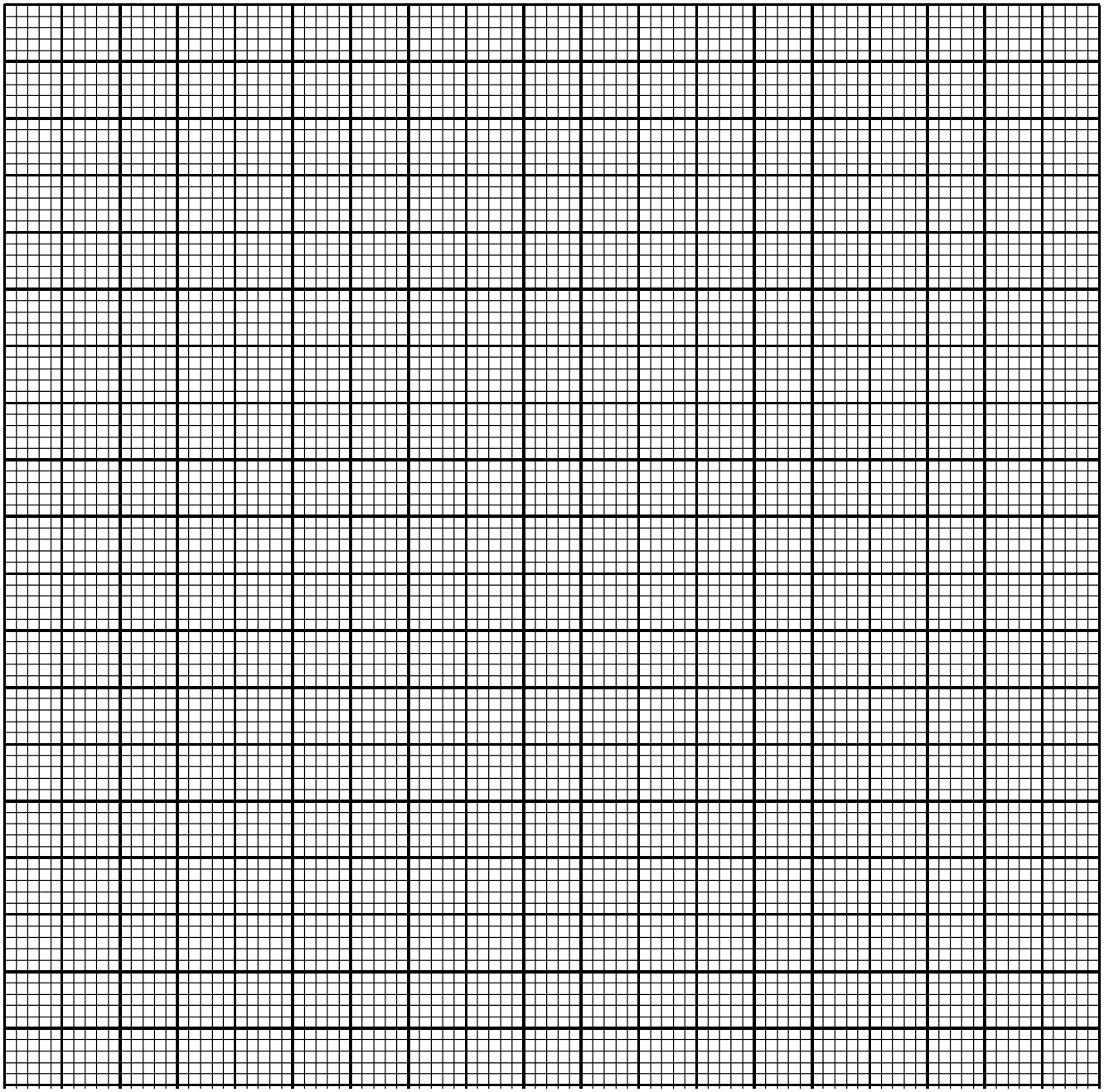
SECTION B(40mks)

*Answer **question 6 (compulsory)** and **either** question 7 or 8 in the space provided after question 8*

6. The table below shows the results obtained from an experiment carried out to measure the rate of photosynthesis at different light concentrations (brightness) and varying carbon (IV) oxide concentrations. The rate was determined by counting the number of bubbles of oxygen produced per minutes

CO_2 concentration		0%	0.3%	0.6%	0.9%	1.2%	1.5%	1.8%
Light intensity	1,500 lux	0	16	30	38	40	40	40
	6,000 lux	0	52	80	96	100	98	100
	10,000 lux	0	80	100	115	120	122	120

(a) On the same axes ; plot graphs of rate of photosynthesis against carbon (IV) oxide concentration (3marks)



(I) What is the effect of increasing light intensity on the rate of photosynthesis. (3marks)

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(II) How does carbon (IV) oxide concentration affect the rate of photosynthesis (3marks)

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(III) State two other factors other than carbon (IV) oxide concentration and light intensity that will affect the rate of photosynthesis (2marks)

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b) Distinguish between photosynthesis and chemosynthesis (2marks)

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7. (a) Differentiate between primary growth and secondary growth (2marks)

(b) Describe how region of growth in roots can be determined (7marks)

(c) Describe secondary growth in dicotyledonous plants (11marks)

8. a) Differentiate between simple reflex action and conditional reflex action (3marks)

a) Using relevant examples ,describe a simple reflex action (13marks)

C) Describe the resting potential with reference to transmission of an impulse (4marks)

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