

JOINT EXAMINATION

INSTRUCTIONS TO CANDIDATES:

- Answer ALL the questions
- Answers should be written in the spaces provided

1. A student observed feeding relationship while on a tour in a coastal Island.
Eagles feed on small fish, Small fish feed on sea grass, Insect larvae and molluscs feed on sea grass, Insect larvae fed on by small fish, while crabs feed on insect larvae and molluscs.

a) From the above information, construct a food web. (3mks)

b) In which trophic level is small fish found. (1mk)

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c) Extract a food chain where the Eagle is a tertiary consumer. (1mk)

d) Suppose all the crabs were poisoned, what would be the immediate effect in the ecosystem. Give a reason. (1mk)

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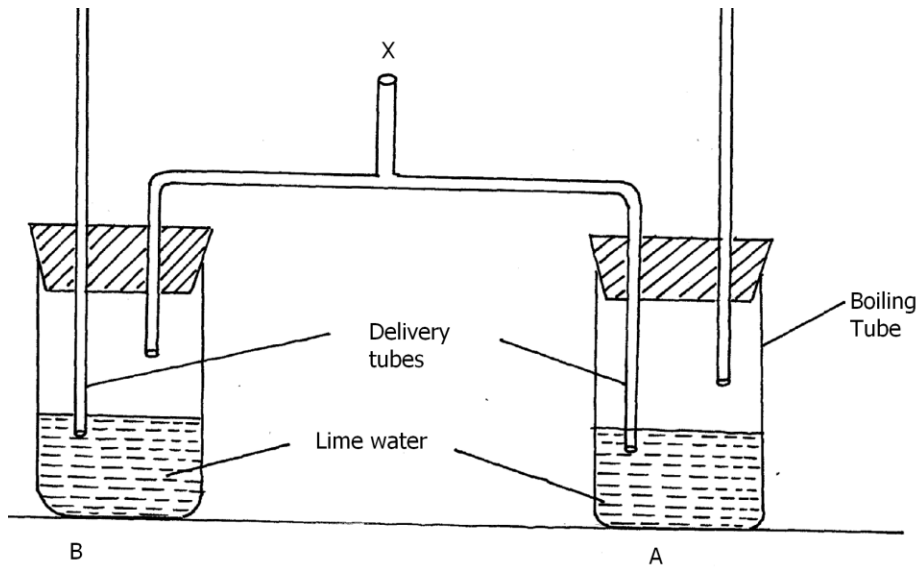
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(e) Give a reason why pyramid of biomass is a better representation of energy flow in an eco system than pyramid of numbers. (1mk)

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2. An experiment was set up as shown below.



a) A student blew air in and out through point X. Using arrows indicate on the diagram how air gets in and out of the set up. (2mks)

b) (i) In which of the test tube would lime water turn milky first. (1mk)

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(ii) Give a reason. (1mk)

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(c) What is the effect of lactic acid in the thigh muscles of an athlete after a short fast race. (2mks)

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(d) Identify the type of muscle in human being where formation and effect of lactic acid is not felt. (1mk)

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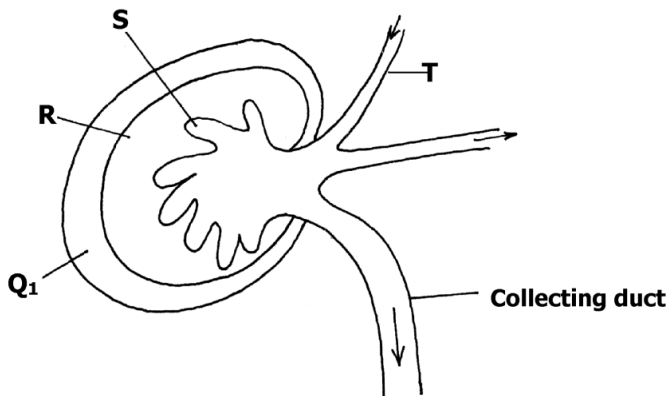
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(e) What is the biological significance of boiling milk /ultra heat treated milk. (1mk)

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3. The diagram below is a longitudinal section of an organ in mammals



a) Name the organ (1mk)

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b) Identify the parts R and S (2mks)

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c) i) State two differences in the structure above found in the desert-dwelling rat and fish (3mks)

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ii) Account for the difference stated above. (2mks)

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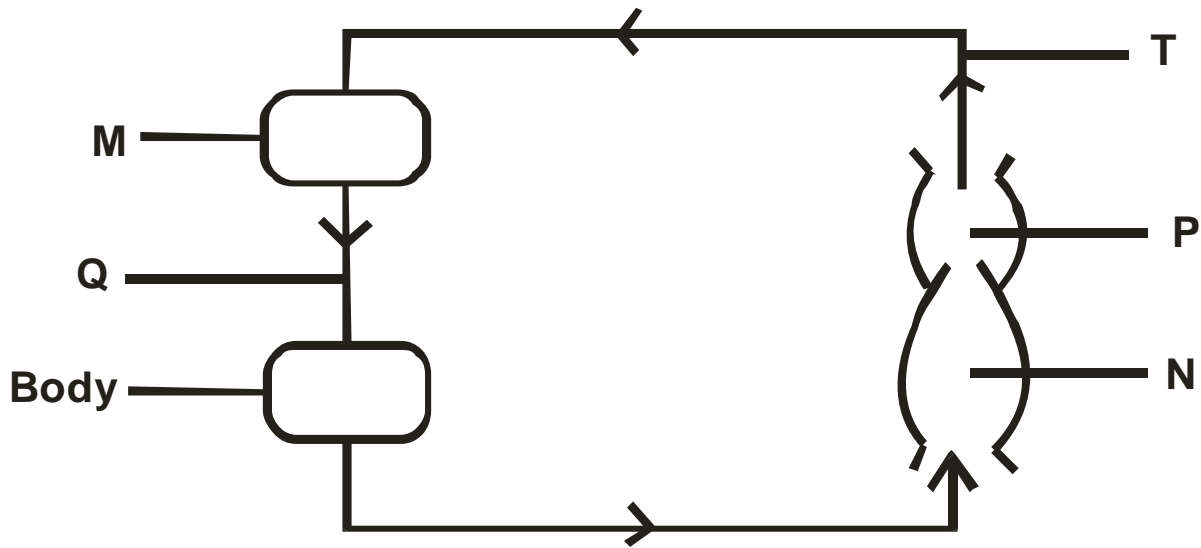
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d) Name the gland associated with the secretion of aldosterone hormone. (1mk)

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4. The diagram below represents a circulatory system found in a certain class of chordates.



a) Identify the type of circulatory system shown above. (1mk)

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b) Name **one** class of animals having this type of circulatory system. (1mk)

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c) Identify parts labelled M, N and P. (3mks)

M.....

N.....

P.....

d) What disadvantages is faced by having the types of circulatory system shown above? (2mks)

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e) Between blood vessels Q and T, which one carries oxygenated blood? (1mk)

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5. In an experiment to investigate the rate of reaction indicated by the equation.



Sucrose Fructose Glucose

It was found out that for products fructose and glucose to form, substance “K” was needed. Temperature was maintained at 37°C. When substance “L” was added, reaction slowed and then stopped.

a) Suggest identity of the substances (2mks)

K.....

L.....

c) Other than temperature, state three factors that increase the rate of reaction. (3mks)

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d) Explain how substance “L” slowed the rate of reaction. (2mks)

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e) What type of reaction is represented by the equation above? (1mk)

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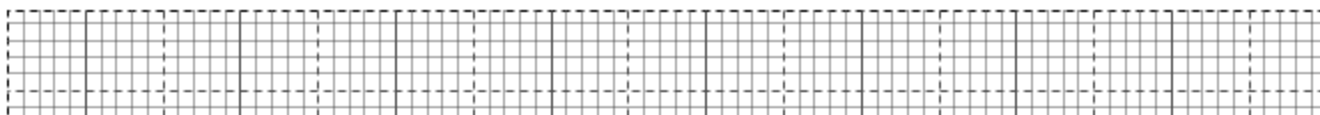
SECTION B (40 MARKS)

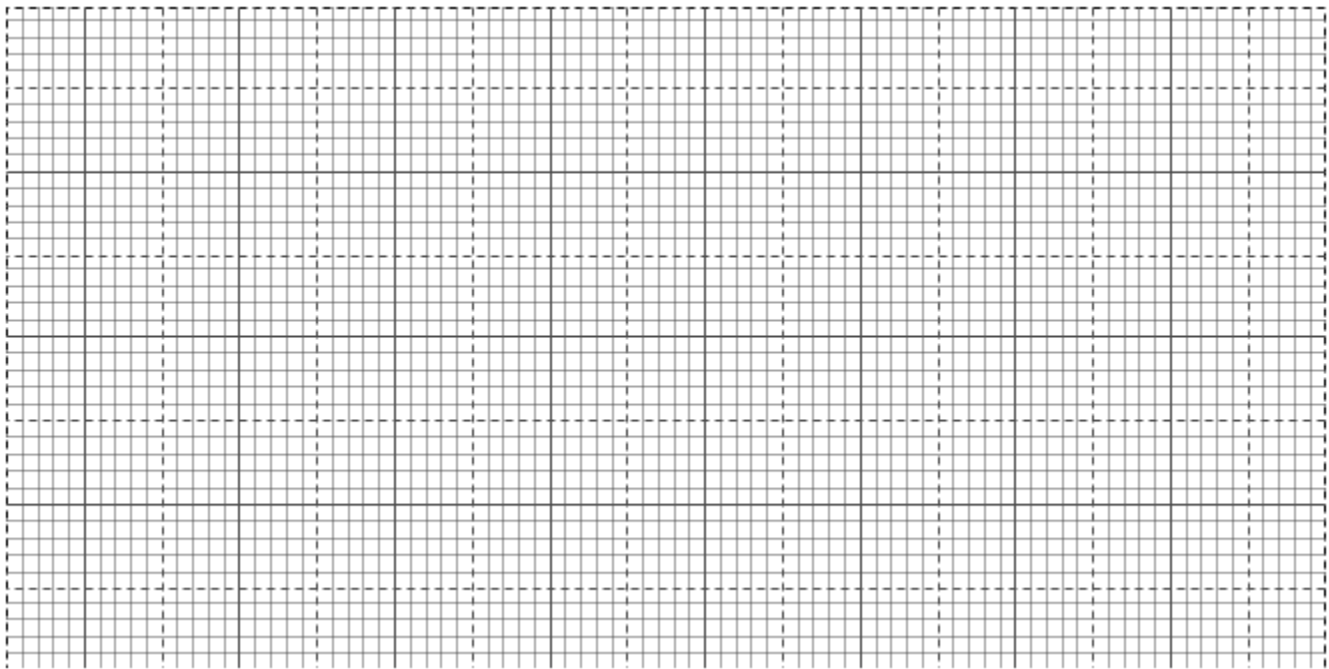
Answer questions 6 (compulsory) and either questions 7 or 8 in the spaces provided questions

6. The glucose level in mg per 100cm³ of blood was determined in two person Y and Z. Both had stayed for six hours without taking food. They were fed on equal amount of glucose at the start of the experiment. The amount of glucose in their blood was determined at intervals. The results are shown in the table below.

Times in minutes	Glucose level in blood in mg /100cm ³	
	Y	Z
0	85	78
20	105	110
30	105	110
45	130	170
60	100	195
80	93	190
100	90	140
120	90	130
140	88	120

a) On the grid provided, plot graphs of glucose levels in blood against time on the same axes. (7mks)





b) What was the concentration of glucose in the blood of Y and Z at the 50th minute? (2mks)

Y.....

Z.....

c) Account for the level of glucose in present Y

i) During the first 45 minutes. (2mks)

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ii) After 45th minute to the end. (4mks)

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d) Account for the decrease in glucose level person Z after 60 minutes. (2mks)

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e) Low blood sugar level in harmful to the body .Explain. (3mks)

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7. Discuss the adaptations of seeds and fruits to dispersal. (20mks)

8 Describe the structure and functions of various organelles in a mature animal cell. (20mks)

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