

Name.....class.....Adm. No.....

231/3

BIOLOGY

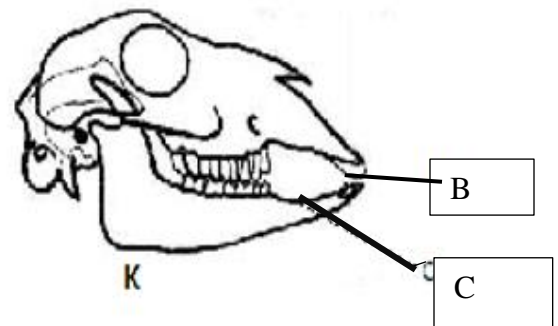
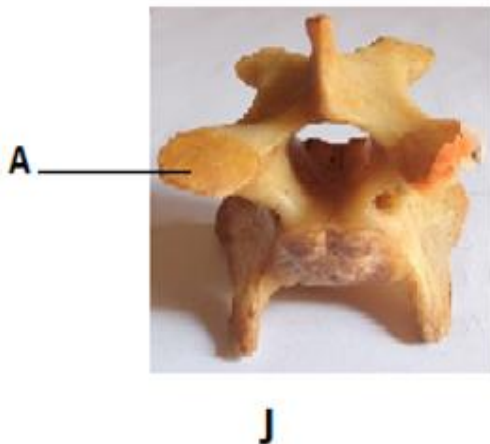
(Practical)

Paper 3

Time: 1 ¾ hours

MARKING SCHEME

1. The diagrams below are bones obtained from different mammals



- a) Identify bone J. (1 mrk) **Cervical vertebrae**
- b) Name the part labelled A. (1 mrk) **Anterior zygapophysis/pre-zygapophysis (reject pre-zygapophyses and metapophyses)**
- c) Give the name of the cartilage that separates specimen J from another vertebrae (1 mrk) **inter-vertebral disc**
- d) State two functions of the cartilage named in c above. (2 mrk)
- i) **It acts as a cushion that absorbs shock**

- ii) It reduces friction
- iii) It makes the vertebral column flexible by allowing for certain degree of movement between the vertebrae

e) State two structural differences between atlas vertebra and specimen J (2 mrk)

Atlas	Specimen J
i) Has no centrum	i) Has a centrum
ii) Has a wide winglike transverse process which is not branched	ii) Has a branched transverse processes

f) i) State the diet of the mammal whose skull is illustrated in drawing K. Explain your answer.
Diet (1 mrk)

vegetation/grass acc plant

- Explanation (2 mrk)

Presence of

Absence of canines

Absence of incisors in front of upper jaw/presence of horny pad

ii) Name the parts labeled B and C. (2 mrk)

B-horny pad

C-diastema

iii) State the function of the part labeled B. (1 mrk)

Provides

hard surface against which grass is pressed and cut by lower incisor

2. You are provided with solution labeled L and K.

a) Use the reagents provided to determine their identity. Record your procedure, observation and conclusion in the table below. (6 marks)

Food substance	procedure	observation	conclusion
starch	Put solution K in a test tube add iodine solution	Blue black	Presence of starch
	Put solution L in a test tube add iodine solution	No colour change/colour of iodine/brown	Absence of starch
Reducing sugars	Put solution K in a test tube and equal volume of Benedict's solution; heat to boil	No colour change; colour of benedicts solution remains	Absence of reducing sugars

	Put solution L in a test tube Add Benedict's solution; heat to boil.	Colour changes to green, yellow, orange, brown	Presence of reducing sugars.
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- b. Tie one end of the visking tubing provided tightly. Put solution K in the visking tubing and tie the open end. Immerse the visking tubing in the beaker containing solution L. Let the set up stand for about 30 minutes.
- i) Rinse the visking tubing with distilled water then test the contents in the **visking tubing** with iodine and Benedict's solution. Record your observation and conclusion in the table below. (2marks)

Test with	observation	conclusion
Iodine solution	Blue black	Presence of starch
Benedict's solution	Colour changes to orange;	Presence of reducing sugars.

- ii) Test the contents in the **beaker** with iodine and Benedict's solution. Record your procedure, observation and conclusion in the table below. (2marks)

Test with	observation	conclusion
Iodine solution	No colour change/colour of iodine/brown.	Absence of starch.
Benedict's solution	Colour changes to orange;	Presence of reducing sugars

- c. Account for your observation in b(i) and (ii) above. (4mks)

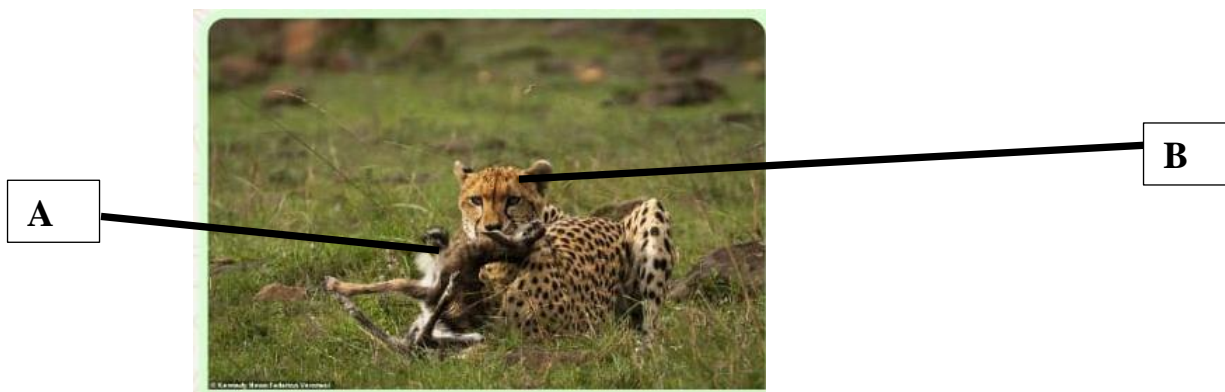
Reducing sugar molecules are small in sizes; able to pass through the semi – permeable membrane into the visking tubing by diffusion. (2mks)

Starch molecules are too large; to pass through the semi -permeable membrane/visking tubing into the beaker. (2mks)

- d. What does a visking tubing equate to in a living organism? (1mark)

Cell membrane (1mk)

3. Study the photograph of some animals in a certain ecosystem and answer the questions that follow.



a) State the type of biotic relationship exhibited by the animals shown in the photograph. (1mk)

Predation / Predator-prey

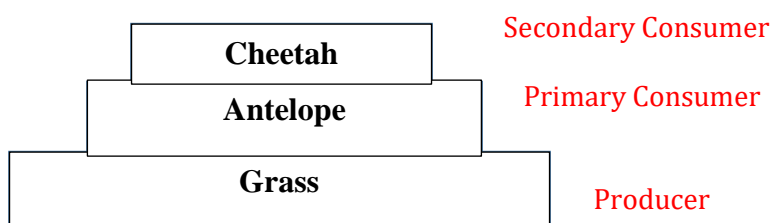
b.i) Identify which of the two animals, A and B will have the least biomass (1mk)

B is at higher trophic level than A /

B is a secondary consumer while A is a primary consumer;

Biomass decreases from primary to secondary as a result of loss of energy from one trophic level to another.

ii) Draw a pyramid of biomass for the organisms in the ecosystem (3mks)



c) Explain two survival adaptive features for the organisms illustrated in the photograph (3mks)

Both animals camouflage / blend well with the environment hiding themselves

Both animals are very swift in running

Animal B has strong jaws with carnassial teeth

C i) Name the trophic level occupied by the antelope (1mk)

Primary consumer

ii) Give a reason for your answer in c (i) above (1mk)

It feeds on grass ;

f) Suggest three ways in which the above ecosystem would be affected if there is a prolonged drought (3mks)

Most grass will die / dry;

Some organisms (antelope and cheetah) will starve to death;

Some organisms may migrate in search for food and shelter

