231/3
BIOLOGY
PAPER 3
(PRACTICAL)

MARKING SCHEME

1. a) Cervical vertebra(reject cervical vertebrae) (1 mark)

b) Anterior zygapophysis/pre-zygapophyses/metapophysis(reject pre-zygapophyses and metapophyses) (1 mark)

c) Inter-vertebral disc (1 mark)

d) 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 (2 marks)

e)

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

f) i) Vegetation/grass (1 mark)
Explanation
- Presence of diastema
- Absence of canines and incisors infront of upper jaw/presence of horny pad
1x1= 1 mark

ii) B-Horny pad (1 mark)
C-Diastema (1 mark)

iii) Provides hard surface against which grass is presses and cut by lower incisors (1 mark)

g) i) Synovial fluid (1 mark)

ii) It lubricates the joint to reduce friction during movement. (1 mark)

iii) Homologous structures (1 mark)
Reason-the two structures have a common embryonic origin/both have a pentadactly or 5 digit structures but modified to perform different functions (1 mark)

Food substance being tested	Procedure	Observations	Conclusion
Reducing sugars	Put food sample in a test tube. Add equal amount of Benedict's solution. heat/boil	No observable colour change or colour of Benedict retained	Reducing sugar absent
Non-reducing sugar	To 1ml of solution R, add 2 drops of solution T/dilute hydrochloric acid and boil. Cool and add solution S/dilute sodium hydrogen carbonate until fizzing or effervescence stops. Add equal volume of Benedict solution and heat/boil	Colour changes from blue to green to yellow/brown/orage	Non reducing sugar present
Ascorbic acid (Vitamin C)	Put 2ml of DCPIP in a test tube. To 2ml of solution V/dichlorophenoll indophenols add solution R/food substance drop by drop and shake after each drop	No observable colour change	Ascorbic acid(Vitamin C) absent

Food substance - ½ mark
Procedure - 1mark
Observation - 1 mark
Conclusion - ½ mark Total=9 marks

Note: when the procedure is wrong, no mark for correct observation and conclusion

b) S- used to neutralize the acid (1 mark)
T- Hydrolyses or breaks down non-reducing sugars to reducing sugars (1 mark)

3. a) Heterostyly (1 mark)

b) Since the stamens are shorter than the Pistil, it becomes impossible for the pollen grains from the stamen to reach the stigma, therefore no self-fertilization. (1 mark)

c) B- apocarpous gynoecium (1 mark)
Reason-The carpels are free from each other (1 mark)
C- Syncarpous gynoecium (1 mark)
Reason- The carpels are fused together (1 mark)

d) Type- Hypogynous/superior ovary (1 mark)

Reason-the ovary occur above other floral parts/other floral parts occur below the ovary (1 mark)

e) i) Division- Bryophyta (1 mark)
Reason-Has spores/green tiny leaves/seta and rhizoids (1 mark)

ii) Autotrophic nutrition (1 mark)

iii) Supports the capsule/holds the capsule in position (1 mark)

iv)