

BIOLOGY PAPER 3
MARKING SCHEME

1. a) X – thoracic vertebra ✓ 1 rej: Thoracic bone
 Y – Lumbar vertebrae ✓ 1 rej. Lumbar bone
 Z – Femur ✓ 1
- b) Abdominal region ✓ 1
- c) Long transverse processes
 Short broad neural spine
 Extra processes / metapophysis
 Large centrum any 2 – two marks
- d) Increase surface area for attachment of muscles ✓ 1
- e) i) Hinge joint ✓ 1
Reason: Presence of condyles ✓ 1 / grooves which articulate with depression of next bone
- ii) Ball and socket joint ✓ 1
Reason: Head shaped like a ball ✓ 1 / rounded end
- f) Pelvic girdle ✓ 1

2. a) 2(b) Leaves with net work veins.....go to 3
- 5(a) Leaves with hairsSolanum incunum
- 7(b) Leaves Bi pinnatego to 8
- 8(a) Leaflets with pointed tipsAcaera measnsii

b) Photograph	Identity	Steps followed
E	Groton megalocarpous	1a, 2b 3b, 4a.
F	Prunus domestica	1a, 2b, 3b, 4b, 5b, 6b.
G	Bidens pilosa	1a, 2b, 3b, 4b, 5b, 6a.
H	Manihot esculentum	1b,7a
I	Solanum icunum	1a, 2b, 3b, 4b, 5a
J	Jacaranda mimoifolia	1a, 7b, 8b
K	Acacia meansii	1b, 7b, 8a
L	Mexican marigold	1a, 2a
M	Phaseolus vulgaris	1a, 2b, 3a

Each identity ½ mark

Each correct steps ½ mark

3. a)

Food	Procedure	Observation	Conclusion
Starch ✓ ¹ / ₂	To 2cm ³ of S add drops of iodine ✓1	Colour changes to blue black ✓ ¹ / ₂	Starch present ✓ ¹ / ₂
Reducing sugars ✓ ¹ / ₂	To 2cm of suspension S add Benedict's solution and heat ✓1	Colour changes to green, to yellow to orange red ✓ ¹ / ₂	Reducing sugars present ✓ ¹ / ₂
Protein ✓ ¹ / ₂	To 2cm of suspension S add drops of sodium hydroxide followed by drops of copper II sulphate ✓1	Colour turns purple ✓ ¹ / ₂	Proteins present ✓ ¹ / ₂
Vitamin C (ascorbic acid) ✓ ¹ / ₂	To about 2cm of DCPIP in a test tube add extract dropwise till in excess ✓1	DCPIP is not decolourised or colour of DCPIP remains ✓ ¹ / ₂	Vitamin C Absent ✓ ¹ / ₂

- Each correct procedure 1 mark.
- Other parts each ¹/₂ mark
- If procedure is wrong deny mark for observation and conclusion
- Reject warm for reducing sugars
- Reject heating for starch and proteins

b) Suspension S can be used to provide energy from respiration for growth and development etc. due to presence of starch and glucose ✓ which are carbohydrates ✓2marks

- It can be useful in making structural components of the body such as cell membranes, skeletal muscles etc. ✓1
- Synthesis of metabolic regulators such as enzymes, and hormones. ✓1
- Repair of worn out tissues and provision of energy during starvation due to presence of proteins. ✓