

4.4.3 Biology Paper 3 (231/3)

1. (a) (i) Sternum; (1 mark)
- (ii) The internal intercostal muscles relax; pulling the ribs upwards; and outwards;
This increases the volume of the rib cage while pressure decreases;
Forcing air into the lungs; (5 marks)
- (b) (i) Anterior/dorsal view; (1 mark)
- (ii) Name - Neural canal; (1 mark)
- Function - Passage of the spinal cord. (1 mark)
- (iii) **V**: It is thick and solid; for bearing the weight of the body (back) (2 marks)
- S**: It is long; to provide a large surface area for attachment of muscles; (2 marks)
- (c) (i) Image width = 9.8 cm;
- (ii) Magnification = $\frac{\text{Image length / width}}{\text{Actual length / width}}$;
- = $\frac{9.8 \pm 0.1}{4.6 \pm 0.1}$
- Mg = $\times 2.13$;
- (iii) Actual length AB = $\frac{10.4 \pm 0.1}{2.13}$;
- = 4.8826 cm ; (5 marks)

2.

Food Substance Tested	Procedure	Observation	Conclusion
1. Reducing sugars	<ul style="list-style-type: none"> Put 2 cm³ of C in a test tube; Add equal volume of Benedict's Solution. Put in a hot water bath/heat/warm/boil; 	No colour change/ blue colour remains/ colour of Benedict's solution remains/ persists;	Reducing sugars absent;
2. Reducing sugar	<ul style="list-style-type: none"> Put 2 cm³ of C in a test tube; Add a few drops of dilute hydrochloric acid. Place the test tube in a hot water bath for 3 minutes; Remove the test tube and cool in cold water. Add (NaH)₂CO₃ drop by drop until fizzing stops Add 2 cm³ of Benedict's Solution. Place the test tube in a hot water bath/heat/warm/boil; 	Colour changes to green / yellow / orange / brown;	Reducing sugars present;
3. Proteins	<ul style="list-style-type: none"> Put 2 cm³ of C in a test tube; Add an equal amount of sodium hydroxide solution and shake. Add copper sulphate drop by drop, shaking well after each addition; 	Colour changes to purple/violet/mauve;	Proteins present;

3.

1. (a) Simple leaves go to 2;
(b) Compound leaves go to 4;
2. (a) Leaves net-veined/reticulate go to 3;
(b) Leaves parallel veined *Commelinaceae*;
3. (a) Leaves with serrated margins *Malvaceae*;
(b) Leaves with smooth (entire) margins *Nyctaginaceae*;
4. (a) Leaves opposite go to 5;
(b) Leaves alternate *Bignoniaceae*;
5. (a) Leaves pinnate *Papilionaceae*;
(b) Leaves trifoliolate *Compositae*;

(10 marks)