231/3

**BIOLOGY**

**PRACTICAL**

**Paper 3**

**MARKING SCHEME**

**MARCH/APRIL - 2023**

1. (i)



**Conditions for a biological drawing**

* Continuous outline D1
* No shading 1 mark
* Transverse section – D2 1 mark

**Labels**

* Labeling line must touch intended structure
* Labeling line must be continuous
* No arrowheads
* No criss-crossing
* Label must be singular if 1 labeling line touches 1 structure
* Any 2 correct labels

(ii) Axile (placentation); (1 mark)

(iii) Parietal;

 Marginal;

Basal;

Free central; Mark 1st 2 correctly spelled placentation

 (iv)

|  |  |  |  |
| --- | --- | --- | --- |
| Food substance  | Procedure  | Observation | Conclusion  |
| Protein(s) | To (2ml of) food substance, add (equal amount of) sodium hydroxide solution then add copper (II) sulphate solution dropwise; (1 mark) | Blue colour (of copper (II) sulphate solution) retained; (1 mark) | Protein(s) absent;(1 mark) |
| Non-reducing sugar(s) | To (2ml of) food substance, add (2 drops of) hydrochloric acid, heat, cool; add sodium hydrogen carbonate solution dropwise until fizzing stop. Add (equal amount of) Benedict’s solution then heat/boil/warm/place in hot waterbath;(2 marks) | Green colour observed;Yellow/orange/brown;(1 mark) | Non-reducing sugar(s) present;(1 mark) |

**Distribution of marks:**

* Food substance column – see correct food substance but do not award marks.
* Procedure – use correct chemical symbols of reagent if words are not used.
* Observation – reject alternative colours.
* Conclusion – correctly spelled food substance and traces of for green colour in non-reducing sugar.
1. (a) Growth and development;

Reproduction;

Nutrition; Mark 1st 2

 (b) (i) tracheole; Reject wrong spelling but underline plural to allow to mark (ii)

 (ii) Ramify body tissues for direct supply to individual cells; thin to reduce diffusion distance; moist walls to dissolve gases (into solution form); lack chitin to permit gaseous exchance;

* Tied to 2(b) (i)
* Mark 1st 3

(c) Phylum: Arthropoda; Reject wrong spelling

 External feature:

* Segmented bodies;
* Jointed appendages;
* Exoskeleton;

External features tied to phylum, marks 1st 2

(d) Egg(s) Nymph(s) Adult(s);

 Award correct arrows on the diagram.

(e)

|  |  |  |
| --- | --- | --- |
| **Name of hormone**  | **Site of production**  | **Function**  |
| Juvenile (hormone); | Corpus allatum | Formation of larval cuticle |
| Ecdysone  | Ptothoracic gland; | Moulting/ecdysis/laying of adult cuticle; |

3.

1. (a) (5 marks)

|  |  |
| --- | --- |
| **Test tube**  | **Observations** |
| **On placing specimen Y**  | **On introducing a glowing splint** |
| A  | 1. Formation of foam;
2. Production of bubbles;
 | Glowing splint relights/ rekindles; |
| B  | No foam /no bubbles/ effervescence produced  | Glowing splint does not relight/ rekindle; |

(b) Tied to (a)

1. Catalase (enzyme); breakdown hydrogen peroxide; into water and oxygen; (3 marks)
2. Boiling denature catase enzyme; (therefore breakdown of hydrogen peroxide hence no oxygen formed) (1 mark)

(c) Control experiment; reject acts as a control experiment.

(d) Name of organ: Liver;

 **Functions:**

* Blood sugar regulation;
* Deamination;
* Thermoregulation;
* Haemoglobin regulation;
* Regulation of plasma proteins;
* Manufacture of red blood cells during foetus stage;
* Formation and elimination of excess cholesterol;
* Storage of blood;
* Storage of vitamins B, C, E, K and mineral; *Mark 1st 2*