**BIOLOGY FORM 4 PAPER 3 MARKING SCHEME**

1. a) i)

|  |  |  |
| --- | --- | --- |
| Experiment set up | Solution X inside the tubing | Iodine solution outside the tubing |
| Beginning of experiment | White/ cream rej.yellow | Yellow/brown colour of iodine retained |
| End of experiment | Solution turns blue black/black | No colour change /brown /yellow colour of iodine remains |

ii) Starch

iii) Semi – permeable

iv) Iodine (molecules) moved into starch solution / solution X across the tubing through diffusion, turning it blue black; starch (molecules) were too large such that they could not move across the tubing into the iodine solution.

b) i) Diffusion/ selective diffusion

ii) Size of diffusing molecules, solubility, thickness of the medium/tubing/membrane/permeability of medium/tubing

1. a. i) class – Aves

Reason – presence of beaks and feathers

ii) divergent evolution / adaptive radiation

iii) homologous structures

iv) – length

* shape
* size

b) i) flight

ii) X – Insecta

Y- mammalian

iii) Analogous structures

iv) - Pollination

* production of honey used as food

1. a) Q – unidirectional light

R – Sufficient / adequate light

S – in the dark.

b)

|  |  |
| --- | --- |
| Seedling R | Seedling S |
| Short stem | Longer stem |
| Large leaves | Small leaves |
| Green leaves | Yellow leaves |
| Green stem | Light yellow stem |
| Thick stem | Thinner stem |

Mark first 2

c) Term – Etiolation

Significance – the seedling is elongating / growing fast to reach light

d) Name – positive phototropism; reject phototropism alone

Explanation – exposure to unidirectional light causes auxins to migrate to the shaded side. This stimulates faster elongation of cells in the shaded side relative to lighted side resulting in faster growth on that side causing the seedling to bend to the light side.

e) Name – Epigeal

Reason – cotyledons are brought above the ground