**3KNT EXAM**

**BIOLOGY PAPER 3**

**MARKING SCHEME**

1a.

|  |  |  |  |
| --- | --- | --- | --- |
| Food substance | Procedure | Observation | Conclusion |
| Starch | To a little of suspension w add a few drops of iodine solution | Yellow /brown colour of iodine remained | Starch absent |
| Reducing sugar | To a little of suspension w, add equal amount of Benedict solution and boil the mixture | Blue colour remained | Reducing sugar absent |
| Non-reducing sugar | To a little of suspension w in a test tube, add a few drops of dilute hydrochloric acid and boil.  Cool the mixture and add sodium hydroxide carbonate until fizzing stops. Add equal amount of benedictsolution and boil | Colour changes from blue to green to yellow to orange to brown | Non reducing sugar present |
| Protein | To a little of suspension w add sodium hydrogen shake and add copper (II) sulphate dropwise | Colour changes to purple | Protein present |

bi.To hydrolyse non reducing sugar to reducing sugar

ii.To neutralize hydrochloric acid ad create a suitable pH for Benedicts solution to function

2i.

|  |  |  |
| --- | --- | --- |
| Specimen | Food | Reason |
| A | Aquatic matter and invertebrates | Wide shovel shaped beak |
| B | nectar | Long, thin beak |
| C | nuts | Short, thick strong beak |
| D | flesh | Strong, sharp and curved beak |

ii.

|  |  |  |
| --- | --- | --- |
| Part | habitat | reason |
| D | aquatic | Webbed feet for swimming /wading |
| E | Tree branches | Long fingers /toes for perching |

bi.Divergent evolution

Reason: similar basic structure and embryonic origin but modified into different form/appearances

ii.Enable the organisms /animals to utilize different ecological niches

To avoid occupation for food

ci.Structures which have lost function and after long period of time they become reduced in size.

ii.Caecum /appendix /coccyx

3ai.A. dicotyledonae

B.Monocotyledonae

ii.

|  |  |
| --- | --- |
| Specimen A | Specimen B |
| Vascular bundles arranges in a ring | Vascular bundle scattered in the stem |
| Has distinct cortex and pith | Pith and cortex absent |
| Vascular cambium present | Vascular cambium absent |

iii.Insect: brightly coloured petals to attract insects

bi.Fish gill

ii.G6=gill rakers

G7-gill bar

G8-gill filament

iii.Gaseous exchange /excretion of carbon (IV) oxide)

iv.Numerous to provide large S.A for gaseous exchange

-Highly vascularised to maintain a high concentration gradient for gaseous exchange

- Presence of gill rakers to trap solid particles hence protecting the delicate gill filament

- Gill bar is long bony structure to provide mechanical support to the gill filaments and gill rakers