**MARKING SCHEME.**

**TERM 2 2022 OPENER EXAM FORM 4**

**231/3**

**BIOLOGY, FORM IV**

**PAPER 3 (PRACTICAL)**

**TIME: 13/4 Hours**

 12marks

|  |  |  |  |
| --- | --- | --- | --- |
| **Food** | **Procedure** | **Observation** | **Conclusion** |
| **Starch** | put two millilitres of suspension M into a clean test tube. Add two drops of iodine solution and shake well. | Brown colour of iodine SOLUTION turns blue-black | starch present; |
| **Reducing sugar**  | put two millilitres of suspension M into a clean test tube. Add of two millilitres Benedict’s solution, shake well and heat to boil Rej If Benedict’s is not in possessive form | The blue colour of Benedict’s solution remains Rej: no colour change | Reducing sugars absent. |
| **Protein** | put two millilitres of suspension M into a clean test tube. Add two millilitres of sodium hydroxide solution and shake well.Slowly add 2 drops of Copper (II) sulphate solution and shake well. | On adding Copper (II) sulphate solution, a blue ring forms on the solution. On shaking, the mixture turns purple  | proteins present. |
| **Vitamin C** | put two millilitres of DCPIP solution into a clean test tube. Add solution M dropwise while shaking. | The blue colour of DCPIP solution persist. | Vitamin C absent. |

b) Amylase. Any two correct 2marks.

 Maltase.

 protease

c) Sodium hydrogen carbonate. To neutralise excess hydrochloric acid. 1mark.

 Hydrochloric acid. To hydrolyse complex sugars (non-reducing sugars) to simple sugars (reducing sugars). 1 mark.

1. a) (4 marks)

 Illustration Name of mutation

 I Non -disjunction

 II Deletion.

 III Inversion.

 IV Translocation

b) Brings about reversing the gene sequence thus enhancing advantageous or disadvantageous genes (1 mark)

 c) lethal since the offspring may lose genes responsible for the synthesis of some vital proteins (2 marks)

d) During prophase (1 mark)

e) i) Random and spontaneous change in individual’s genetic makeup. (1 mark)

ii) Very high temperatures.

 Radiations: alpha, gamma, beta, UV and X-rays

Viruses: papilloma

Heavy metals: mercury. Any two correct answers (2marks)

1. a) (i)

|  |  |  |
| --- | --- | --- |
| specimen | Food | reason |
| A | Aquatic matter and Invertebrates | Wide shovel shaped beak |
| B | Nectar | Long, thin beak |
| C | Nuts | Short, thick strong beak |
| F | Flesh | Strong sharp curved talons |

 (4mks)

 (ii)

|  |  |  |
| --- | --- | --- |
| part | Habitat | Reason |
| D | Aquatic | Webbed feet for swimming / wading |
| E | Tree branches | Long fingers / toes for perching |

 (4mks)

 b) (i) Divergent evolution

 Reason: similar basic structure and embryonic origin but modified into different forms / appearances (2mks)

 (ii) Enable the organisms / animals to utilize different ecological niches, to avoid competition for food. (1mrk)

 c) (i)Structures with different embryonic origin but have similar function

 (ii) -Wings of birds and insects. (1mrk)

 -Eye of mammals and octopus. (mark one)