MARKING SCHEME.

TERM 2 2022 OPENER EXAM FORM 4
231/3
BIOLOGY, FORM IV
PAPER 3 (PRACTICAL)
TIME: $1^{3}/_{4}$ Hours

12marks

1.

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.
Maltase.
protease
Any two correct 2marks.

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.

2. 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)

3. 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)