KAMPALA WAKISO GIANT SCHOOLS' ASSOCIATION

National Joint Mock Examination 2022

Uganda Certificate of Education

BIOLOGY 1

DRAFT MARKING GUIDE

SECTION A (30 MARKS)

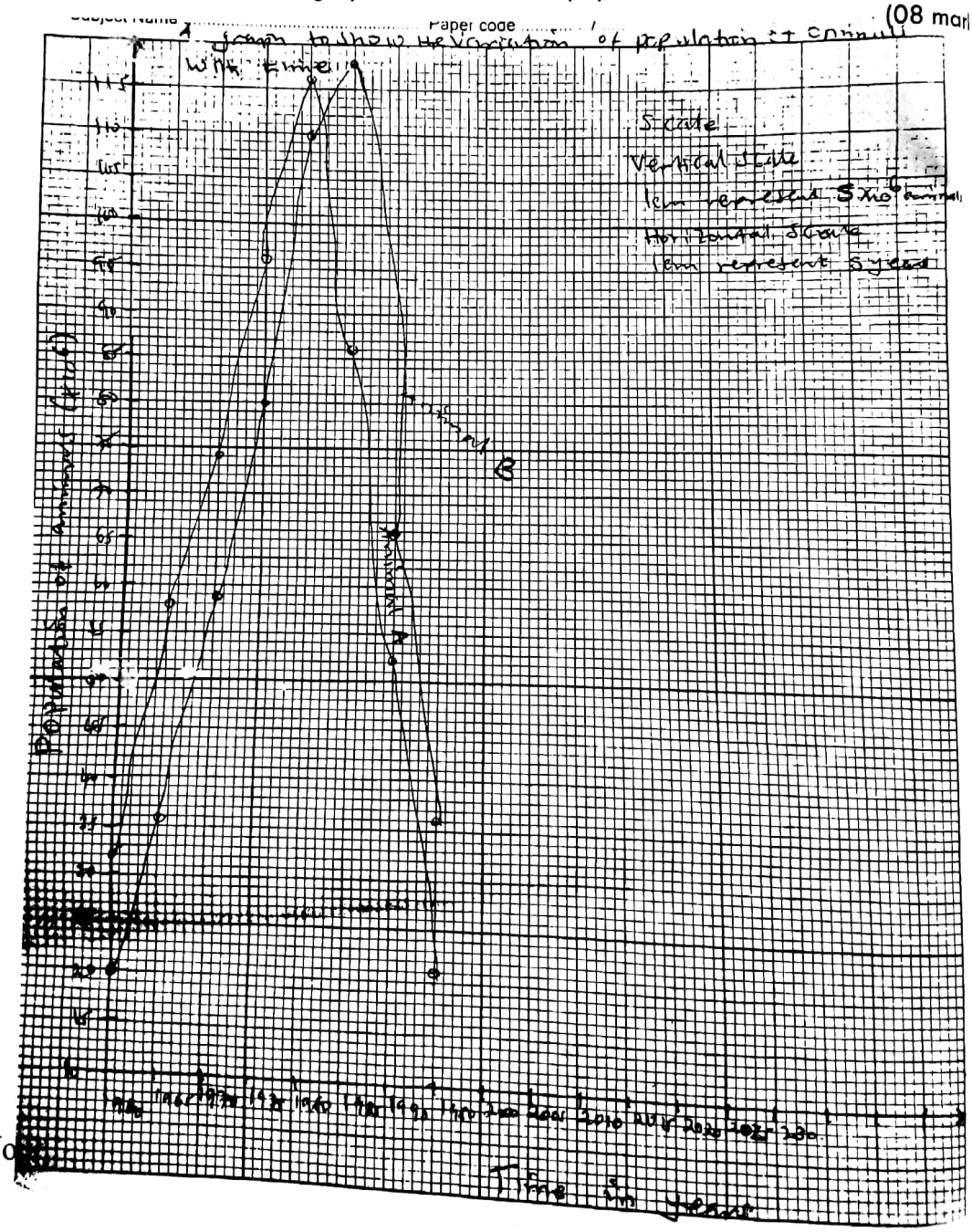
1. A	7. C	13. C	19. C	25. A
2. C	8. B	14. B	20. C	26. B
3. C	9. A	15. B	21. B	27. B
4. D	10. A	16. C	22. D	28. D
5. A	11. D	17. A	23. A	29. C
6. A	12. B	18. D	24. B	30. B

SECTION B (40 MARKS)

Answer **all** *questions in this section*

All answers to this section must be written in the spaces provided

31. (a) On the same axis, draw a graph to show how the population of the organisms vary wi (08 mar



(b) Initially, the population of animal A is higher than that of animal B, but with time time, the population of the two animals increases exponentially up to the maximum such that animal A reached a maximum of 116×10^5 and animal B reached a maximum of 118×10^6 between 1985 to 1995, the population of animal A decreased gradually and between 1990 to 1995, the population of animal B decreased rapidly from $(118 \text{ to } 36) \times 10^6$. (03 marks)

(c) (i) The population increased because there few predators feeding on them many reproducing individuals and enough food material with no resistance. (02 marks)

(ii) The population decreased because they were being eaten by predators, resistance, diseases and poison. (02 marks)

(d)
- Effect of temperature
- Presence of shelter
- Presence of food materials
- Presence of predators.

Any 2 x 1 = 02 marks

(e) (i) Animal B ½ mark
Reason : Its population is smaller than that of A at the beginning. 01 mark

(ii) Animal A ½ mark
Reason : It's population is always higher than that of A at the beginning. 01 mark

2. (a) **Transpiration** is the process by which plants loose excess water in form of water vapor through their leaves. (01 mark)

(b) (i) Curve 3
(ii) Curve 2
(iii) Curve 4
(iv) Curve 1

(c) (i) Leaf **A** was greased at it's upper surface but it's lower surface with many stomata was not greased which allowed water to be lost.
(ii) Leaf **B** lost little water than leaf A because it's lower surface with many stomata was greased hence blocking the surface for water loss.
(iii) Leaf **C** lost the largest amount of water because it's surfaces were not greased which allowed evaporation of water through the stomata.
(iv) Leaf **D** lost the least amount of water because it's surfaces were both greased which allowed very little amount of water to be lost.

4 x 1 = 04 marks

(d)
- It cools the plant through evaporation.
- It leads to opening of flowers for pollination.
- It leads to opening and closing of stomata.
- It keep the leaves of a plant unfolded.

Any 1 x 1 = 01 mark

(a) **A.** Afferent vessel
B. Bowman's capsule.
D. glomerulus
E. proximal convulated tubule
F. Descending loop of henle

3 marks

(b) (i) Blood vessel A has a wide diameter while blood Vessel B has a small diameter. (01

(ii) **A** has a wide diameter to allow blood containing proteins and blood cells fro renal artery to enter the neuphrone. (01
B has small diameter to allow only molecules of small size to pass through it at pressure. (01

(c) (i) Ultra filtration ½ m
(ii) Selective re-absorption ½ m

(d) - Has a thin epithelium which shortens the distance of diffusion of the materials.
- it is highly folded to increase the surface area for absorption of food materials.
- it is highly folded to reduce on the speed at which the materials move through it.

Any 2 x 1 = 02

(e) (i) Anti duiret hormone
(ii) Diabetes melitus

SECTION C

34. (a) The pancreas produces pancreatic juice, which contains three enzymes; amylase e which digest proteins to peptides and lipase enzyme which digest lipids, to fatty acid glycerol. (05 m

(b) When the glucose level increase above the normal, the pancreas secrete insulin ho which is transported in blood to liver where it stimulate the conversion of excess gluc glycogen for storage in the liver, it stimulates the oxidation of excess glucose to wate carbon dioxide during respiration.

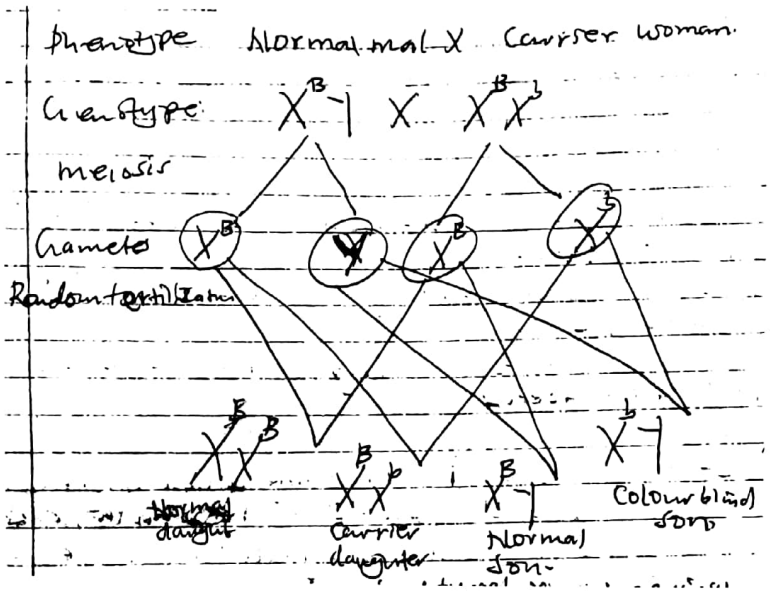
When the glucose level falls below the normal, the pancreas secretes glucagon hormon the alpha cells which stimulate the conversion of the stored glycogen to glucose increasing it's level in blood. (06 m

(c) A diabetic person does not store glucose in their blood and therefore the must fe carbohydrates frequently in order to maintain the level of glucose in blood since the more glucose in urine. (04 m

35 (a) (i) Genotype is the genetic composition / make up of an organism.
Phenotype is the physical appearance of an organism. (02 m

(ii) Mutagens are factors that cause mutation.
Mutation is the sudden change in the structure of a gene / Chromosome. (02 m

(b) Let B represent allele for normal eyes.
Let b represent allele for color blind individual.



(08 marks)

(c)
- it is important in agricultural engineering.
- it is important in improving quality of seeds and fruits.
- it improves on the grains of the seeds. (03 marks)

(a) Implantation is the attachment of the embryo / zygote to the walls of the uterus while Fertilization is the process by which the male gamete fuse with the female gamete to form a zygote. (02 marks)

(b)
- It supplies the embryo with blood nutrients.
- It allows exchange of materials between the maternal blood and that of the fetus.
- It removes nitrogenous waste products from the fetus to the maternal blood for excretion.
- it provides immunity to the foetus by providing anti bodies.
- It provides progesterone hormone that maintains pregnancy. (05 marks)

(c)
- Has many endocrine glands that secrete hormones for maintaining pregnancy.
- Has the membrane which shortens the distance of diffusion of the materials.
- Has a dense network of blood capillaries to supply the foetus with blood. (04 marks)

(d)
- To prevent pathogens from the mother's blood to enter the foetus.
- To prevent bursting of the blood vessels of the foetus by the high pressure.
- To prevent the mixing of the mother's blood with that of the foetus. (04 marks)

(a)
- They have a thin membrane which shortens the distance of diffusion of the respiratory gas.
- They have moist lining which dissolves the respiratory gases.
- They have numerous gill filaments that increase the surface area for diffusion of gases.
- They are permeable to respiratory gases which enable easy diffusion to take place.
- They have dense network of blood capillaries that increase the surface area for transportation of the gases.
- They have gill rakers that filter the solid particles from entering the gills.

Any 5 x 1 = 05 marks

(b) During inspiration in a bony fish, the following takes place

The mouth of the fish opens, to allow water enters into the mouth.
The floor of the mouth cavity is lowered which increase the volume of the buccal cavity hence decreasing the pressure in the mouth below that of the atmosphere.
This enables the water to enter the mouth and the operculum on the gills open to allow wate to enter the gills where oxygen diffuse into the gills and carbon dioxide diffuse in opposi direction. (05 mark

(c) How is gaseous exchange in a cockroach different from that of a man? (05 mark

Cockroach	Man
Absorption of Oxygen is controlled	Absorption of Oxygen is not controlled
Oxygen take short time to reach the tissue	Oxygen takes long time to reach the tissues
Air diffuses directly into the body tissues	Air does not diffuses directly into the bo tissues
It takes place in the tracheoles	It takes place in the alveolus

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