

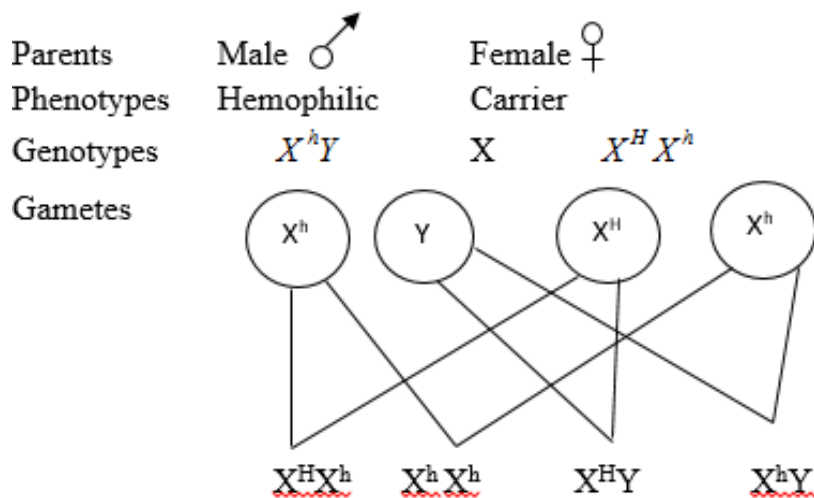
FORM FOUR CLUSTER KCSE MODEL5

BIOLOGY PAPER 2 ANSWERS

SECTION A (40 Marks)

Answer all questions

1. a)
K Pleural membrane
L Intercostal muscles (external and internal)
b) Muscle contracts and flattens, volume of thoracic cavity increases as pressure drops compared to atmospheric pressure. Air is sucked into the lungs.
c) Bordetella pertussis
d) -Thoracic vertebra
 2. a)
A - Ovary B - Cervix or uterine wall
b) -Follicle stimulating hormone; Luteinizing hormone c)
i) - Oestrogen - Progesterone
ii) Oestrogen; repair of the endometrium
Progesterone; proliferation of endometrium for implantation
d) -
- Angiospermaphyta 3.a).
- i. -Description of type, arrangement and specialization of teeth in the jaw of a mammal.
 - ii. Homodont Heterodont
Same teeth type in the jaw Different teeth type in jaw
b) -Site for digestion of food.
-Site for absorption of digested food. c)
i. -Traps light for use during photosynthesis.
ii. - Source of energy for the light stage (photosynthesis)
d) -Transmission of nerve impulse
4. a)
Father: X^hY ; Mother $X^H X^h$
b)



$X^h X^h$

c) Condition where an organism has an extra set of chromosomes.

5. a)

B Sap vacuole/cell

vacuole/vacuole C Tonoplast

D Chloroplast

b) Cellulose

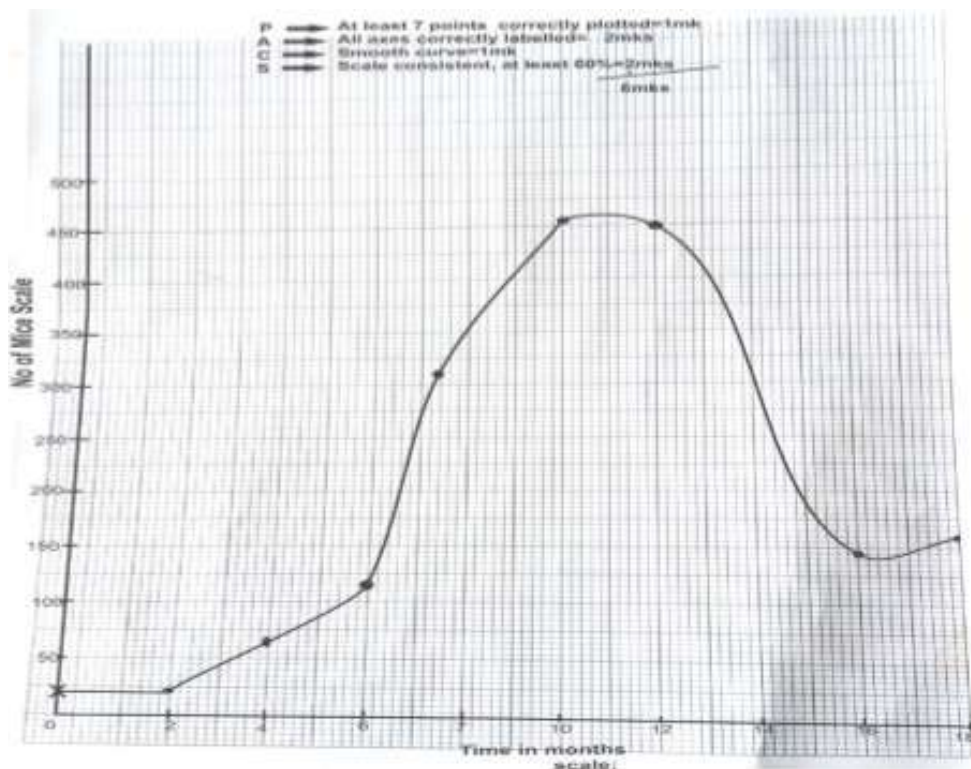
c) Active transport

d) Cell sap is hypertonic to distilled water; water molecules enter the cell by osmosis; the cell enlarges and bursts because it lacks the rigid cellulose cell wall;

SECTION B (40 Marks)

Question 6 (compulsory) and either question 7 or 8

6. a)



b)

i) Population constant/no change in population; mice still maturing/have not given birth;

ii) Slow population growth; few mice have reached sexual maturity.

iii) Rapid/gradual/faster rate of population growth/exponential; -Many mice sexually matured/reproducing/enough food/space/no competition/Birth rate higher than death rate; acc no diseases

iv) Population decline; Competition (is high) food is limiting/space limiting/accumulation of toxic wastes/diseases (outbreak) death rate higher than birth rate; Rej; lack of food.

c)

i) 6 and 8;

ii) $310 - 115 = 195$ mice per month;

$$\frac{370 - 115}{8 - 6}; (125 - 130);$$

d) Population would increase rapidly. (When numbers are mentioned award between (5-15) or (165-175)

e) -Food
-Space/cage size
-Water (first two)

7. a)

-Have sharp pointed incisors ✓for tearing and stripping of flesh from bones.✓

- Have canines that are long/curved/pointed ✓for grasping, holding and tearing the prey.✓
- Have the carnassial teeth✓ with smooth sides, sharp edges ✓to shear and slice flesh from tendons and crush bones.✓
- Have powerful jaw bones✓ which are attached to powerful skeletal muscles✓ that prevent jaw dislocation.✓ It also provides power for cutting and shearing flesh.✓

b)

Deletion: Part of chromosome breaks away and fails to rejoin. This causes loss of genetic information.

Duplication: Either whole or portion of a chromosome replicates by adding an extra length to itself causes duplication of genes.

Translocation: part of a chromosome breaks off and rejoins another chromosome of the non-homologous pair.

Inversion: part of a chromosome breaks away rotates through 180° and rejoins the same chromosome causes reversal of gene sequence.

Non disjunction: Occurs when the homologous chromosomes fail to segregate during meiosis. This causes some gametes to have more chromosomes while others have less or none.

8.

a)	<u>Meristem</u>	<u>Location</u>
	Apical meristem	Tips of roots and shoots.
	Vascular cambium	Between phloem and xylem of roots and stems.
	Cork cambium	Outer part of cortex beneath the epidermis

b)

- Have sunken stomata ✓which cause accumulation of moisture in the sub stomatal air chamber.✓ This reduces the saturation deficit which lowers the rate of water loss.✓
- Have deep roots✓ to reach the underground water table.✓
- Have extensive superficial roots✓ which are shallow to collect water from dew and light showers.✓
- Have needle like leaves ✓to reduce the rate of transpiration.✓
- Have stomata that are small in size✓ and are located on the lower leaf surfaces ✓to reduce transpiration rate.✓
- Have reversed stomatal rhythm✓ whereby the stomata open at night when the temperature is low and close during the day when the temperature is high.✓
- They fold their leaves ✓during the day to hide stomata from direct sunlight.