

FORM FOUR CLUSTER KCSE MODEL8

BIOLOGY PAPER 1 ANSWER

Answer all questions

1. After vigorous activity/when blood sugar level falls below normal.
2. (i) Mesophyll cells/spongy mesophyll/palisade mesophyll/substomata/ space;
(ii) Lenticel; (mark first 3)
(iii) Cuticles;
3. (i) Hyposecretion of insulin;
(ii) Hyposecretion of Antidiuretic hormone;
$$P = \frac{FM \times SC}{MR} = \frac{375}{80} \times 400 = 1870;$$
5. a) (i) Feeding and growth;
(ii) Reduces competition within the species thus increasing of survival;
b) (i) Adult and larvae exploit different food;
(ii) Adult and larvae don't compete for food;
(iii) Pupa can survive adverse conditions;
(iv) Pupa being a non-feeding state enables organisms to go through adverse condition. (mark 1st 2 only)
6. The surface areas to volume ratio is higher in calves than in adults; hence adults retain more heat. /Surface area to volume ratio in adults is lower than the calves hence calves; loose more heat per unit area more than the adults;
7. (a) Granum –contain chlorophyll that traps light (and converts it into A.T.P) for photolysis;
(b) Duodenum; 2mks
8.

Arteries	Veins.
- Transport blood away from the heart To body tissues and organs. - Transport oxygenated blood except pulmonary artery that transports deoxygenated blood to lungs. - Blood flows at high pressure - Blood flows in pulses.	-Transport blood from body tissues and organ to the heart; -Transport deoxygenated blood except pulmonary vein; -Blood flow at low pressure; -Blood flows smoothly. (mark first 2 only)"
9. Nose: the nasal cavities have highly vascularized membrane that warm up the air and moisten it; has hair /produce mucus that trap dust particles and pathogens; 3 mks
10. (a) Lactic acid is toxic; when accumulated to high level it causes muscle cramps; 1mk
(b) –Inner membrane is folded into cristae that provide large surface area for respiration;
11. -Rats have high surface area to volume ratio; tend to loose a lot of heat to the environment;

Presence of fur prevent much heat loss to the environment;

3 mks

(b)-Decreased sweat production;-Shivering contraction and relaxation of skeletal muscles;

-Constriction of arterioles;

-Relaxation of erector pilli muscles; first two 2 mks

12. (a) A-Capsule;

B-Rhizoids; 2mks

(b) Scales; 1mks

13. Cephalothorax/prosoma;

14. -Numerous chloroplasts to absorb light

-Large air spaces/aerenchyma tissue for air storage. Any 2

-No cuticle to facilitate exchange of gases.

15. a) Increase thoracic cavity volume/reduces pressure inside the thoracic cavity/intake of air into the lungs;

b) -Pneumatophores -Aerenchyma tissue mark 1st 2 only.

-Cuticle

16. a) The placenta takes the role of the ovary to produce the hormone progesterone which maintains pregnancy.

b) Production of gametes/ spermatozoa / male sex cell;

17. a) i) Ethanol , CO₂ and ATP energy (All must be present)

ii) Lactic acid, CO₂ and ATP energy; (all must be named)

b) Extra oxygen taken into the body to break lactic acid/oxygen required to remove lactic acid that accumulates in tissues when oxygen supply is less than demand;

18. a) Zone of cell elongation/Explanation;

b) Protect the delicate apical meristem.

c) -Lack vacuoles.

-Have thin cell walls.

-Are small. -

Are actively dividing.

Mark first 2 only.

19. a) Mechanical support;

b) Enables plant to obtain water (and mineral salts);

20. a) Sucking small insects/Animals for barks of trees and rocks;

b) Trapping small crawling animals;

21. a) Deletion

Inversion

Duplication

Non disjunction

Translocation 1st two

b) Y --Premature) baldness

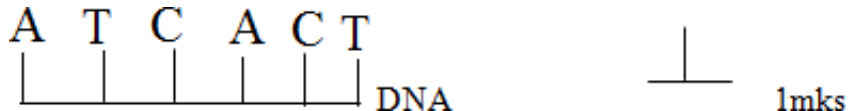
-Hairy nose/ears

X -Colour blindness

-Haemophilia

22. Discontinuous-Blood group and earlobe Rj if only one is given.

-Continuous-finger prints/height and skin colour. 2mks

23. 

(b) Inversion; 1mk

24. (a) Adaptive radiation/divergent evolution;

(b) Organisms with beneficial variations in a population survive in a competition for resources; those without die and the gene is eliminated; 2mks

25. (i) –Eustachian tube;

(ii) –Ear ossicles; 2mks

26. (a) $M_g = \text{objective lens } m_g \times \text{Eye piece lens } m_g$;

$$\times 400 = x \times \times 10$$

$$x = \frac{400}{10} \quad 2mks$$

$$x = \times 40;$$

10% sodium hydroxide;

(b) 1% copper (II) sulphate; 2mks

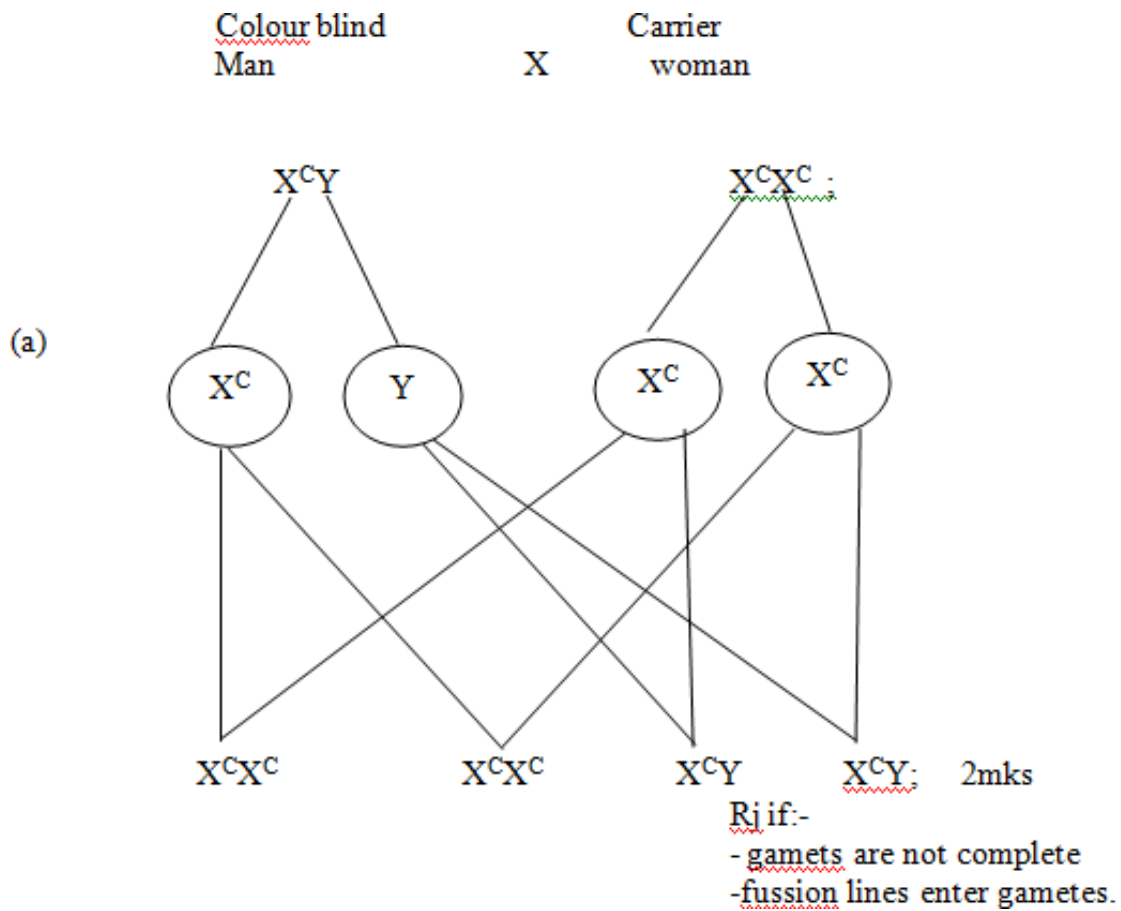
27. (a) –Emulsify fats;

-Neutralize acid/provide Alkaline pH in duodenum; 2mks

(b) –Formation of haemoglobin in red blood cells;

-Anaemia;

28.



(b) Son $\frac{1}{4}$ or 25%;

Daughter $\frac{1}{4}$ or 25%; 2mks

29. Food, medicine, pollen grain dust, feathers, fur. (1st two 2 mks)