FORM FOUR CLUSTER KCSE MODEL 7

BIOLOGY PAPER 2 ANSWERS

SECTION A (40 Marks)

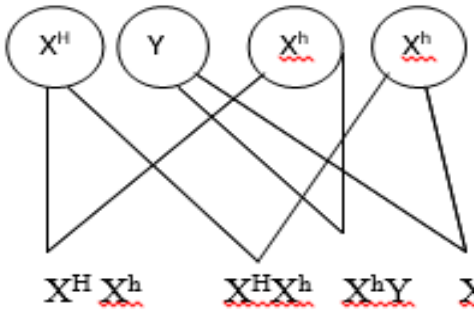
Answer all the questions in the spaces provided

1.

1a)Normal man X^HY x X^hX^h Haemophiliac Woman. X^hX^h

Parental Genotypte X^HY x X^hX^h

Gametes

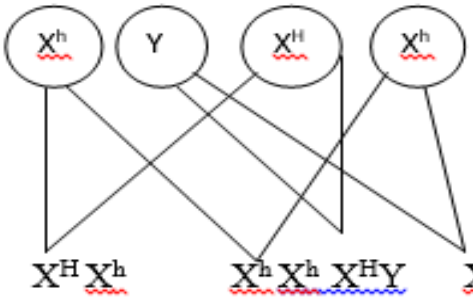


X^HX^h X^HX^h X^hY X^hY

Answer (i) Son X^hY x X^HX^h Woman.

P Genotypes X^hY x X^HX^h ;

Gametes



Children X^HX^h X^hX^h X^HY X^hY

ii). Because men have a single X chromosome on which the gene for haemophilia expreses itself singly OWITTE

b) In blood groups characteristics are controlled by multiple alleces while in monohybrid inheritance is controlled by a pair of allele;

In blood the genes show both carbominance and complete dorminance while in monohybrid the genes show complete dominance;

2. (a).i). The percentage of oxygen in hailed is higher than percentage of oxygen exhailed; this is because some oxygen had diffused into the blood for tissue respiration;while some had been retained in the alveoli.

(ii). Percentage of carbon (iv) oxide breathed out is higher than percentage breathed in; this due to some carbon(iv)oxide were released from the blood into the alveoli;then finally breathed out;and also 0.04% of carbon(iv)oxide were diffused into the blood due to concentration gradient increases the amount diffused out;

(b)

i. They are min walled to allow is placetration of respiratory gases;

ii. They are moist to dissolve gases for faster gaseous exchange;
iii. They highly vascularised for maximum transportation of diffused gases.
iv. Numerous to increase the surface area for maximum diffusion of gases.

3. .(a). Villus; site for absorption of food; (b). (i). P –blood capillaries
Q –Lacteal
(ii). (Brunner's gland) secretes mucus and an alkaline lacteal fluid; (c). (i). Has lacteal system for absorption of fat acid and glycerol;
(ii). Highly vascularised for maximum transportation of absorbed food; (iii). Thin epithelium lining for easy diffusion of digested food;
(iv). Has microvilli to increase the surface area for absorption of digested food; (4 marks max 2 mks)

(d). Activates enzyme trypsinogen (to trypsin);

4. (a). Open circulatory system; (b).
(i).Hepatic portal vein; (ii)Pulmonary vein;
(c (i). I Oxygen;
II Carbon (iv) oxide; Roj Co2 /Carbon dioxide. (ii). Oxyhaemoglobin;

(d). Is the liquid part of blood; from which blood proteins have been filtered out;

5. . (a) i. (Mg = object ions mg x eye piece mg).

$$\frac{x400;}{x10} \text{ x } 40;$$

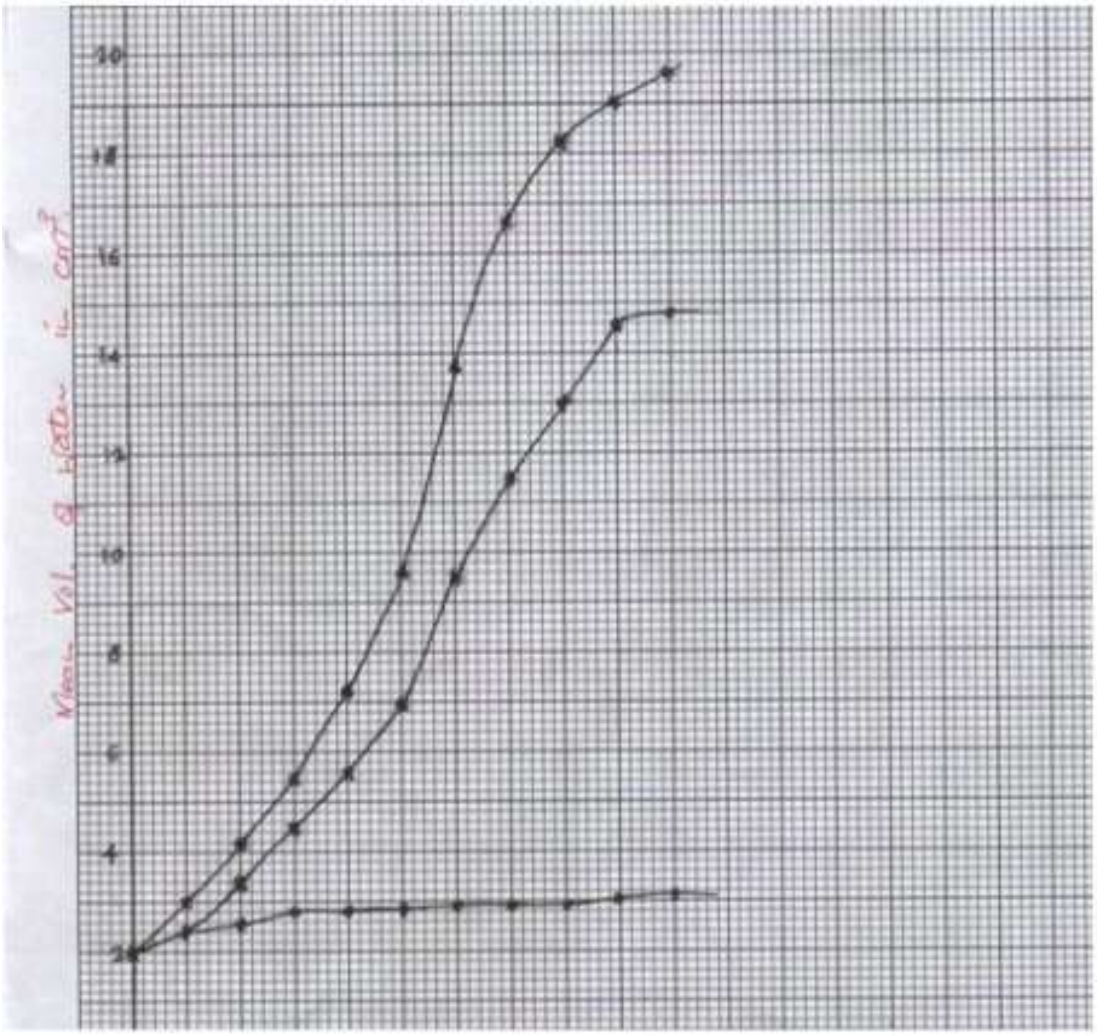
(ii). (Contractile vacuole) – removal of excess water. (b)(i). Bryophyta;
(ii). They show alteration generation; Has leaf like thalus;
b (iii). A –Spores;
B - Sporengiophore ; (iv). For anchorage
Absorption of H_2O and nutrients;

(b). R -The volume of H2O transpired increase with marase with time; this due fanning carrying away water (vapour cheating diffusion gradient; (hence speeding up the rate of transipiration.)
S – The water loss remain almost constant; this due to retaintion of water vapour in the polythene bag reducing the diffusion gradient;hence low rate of transpiration. (4 marks max 3 marks) (e). Potometer;
d)(i). Cut the shoot under the water; Avoid air bubble in the capillary tube;

SECTION B (40 Marks)

Answer questions 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8. 5

6.



d(iii).

- Cutting the twig under the water avoid blockage of the xylem.
- Avoiding bubbles in capillary tube avoid water movement in the ca.

(e).

- Helps in cooling of
- plants. Helps in absorption of water.
- Helps in the uptake of mineral salt.

(f).

- Temperature;
- Humidity;
- Atmospheric pressure;

7. (a). Chemical evolution is a theory stating that chemicals like ammonia, hydrogen oxygen,methane and water vapour;were heated by catalytic effect of lightening during cooling of the earth to form the first life;organic evolution refers to gradual,continous and

inversible change in an organism over a long period time;to form a new species from the pre-existing primitive(simple)forms;
(b) Individuals of the same species show variations; variations are caused by genes; that can be passed on from the parents to the off springs; some of these variations become more favourable/advantageous in the prevailing environmental conditions; organisms usually produce more offsprings than the environment can support; competition for resources therefore sets it; this

leads to struggle for existence; individuals with more favourable traits/adaptations/gene mutations; have better chance of survival; in the struggle they reach reproductive age; reproduce and pass on the favourable characteristics to the offsprings;those with less favourable traits adaptations fail to reach sexual maturity; do no reproduce; and do not pass their genes to the next generation;

8. .(a). Broad flat lamina to increase surface area for maximum absorption of light; carbon (iv) oxide; Thin lamina/blade; to allow light/co2 to pass through a short distance/ to reach photosynthetic cells);
Presence of stomata; to ensure efficient diffusion of carbon (iv)oxide into the leaf; Transparent cuticle/epidermis to allow penetration of light to the palisade cells;
Large number of chloroplasts in the palisade cells next to the upper epidermis to enable them receive maximum light;
Extensive veins; to conduct water and mineral salts to the photosynthetic cells/remover products of photosynthesis;
Large air spaces in the spongy mesophyl layer; to allow gases circulate easily;
Regular arrangement of leaves on stem leaf mosaic; to minimize overlapping/overshadowing; (14 marks) max 10.
b.) Small; with inconspicuous petals/bracts/inflorescent;
Large anthers; loosely attached to flexible filaments for pollen grains to be released readily; small pollen grains/light; smooth pollen grains; long; feathery; stigma; stigma hangs outside the flower; acts as a net to trap pollen grains;