

## **FORM FOUR CLUSTER KCSE MODEL 2**

### **BIOLOGY PAPER 1 ANSWER**

1. (a) Xylem;

(b) Phloem;

(c) Apical Meristem;

2. (a) Failure of homologous chromosome to separate during meiosis/anaphase 1 resulting to one gamete cell having more chromosomes and others having less chromosome;

(b) Body weight; skin colour; height; finger print types; (award 1st two correct)

3. Age;

Occupation/Activity;

Basal Metabolic (B.M.R)

Sex (rej: gender)

Body size; (1st three correct)

4. Plant cells are enclosed by a rigid cellulose cell wall;

5. (a) i) Pre-molar;

(ii) - Presence of two roots;

- Presence of cusps/ridges in the crown;

- Has a broad grinding surface;

(b) J has: - Nerve cells for sensitivity/defecting changes in temperature and pressure;

- Blood vessels/capillaries for supplying oxygen and nutrients and removing metabolic wastes;

6. (a) Vitamin K:

(b) – Maintain osmotic balance of body fluids;

- Transmission of nerve impulses;

7. (a) Myopia/shortsightedness;

(b) By use of concave lens/divergent lens; vto diverge the rays vso that the image is focused on the retina; v

8. During germination, the food in the endosperm is hydrolyzed and then oxidized/converted into new cytoplasm or new material for growth; (hence decreases in weight) while in the embryo food is used for growth; √ hence increases in weight;

9. Cephalothorax;

10. The wild animals are either grazers or browsers; hence wide choice of food and therefore higher carrying capacity while cattle are mainly grazers;

11. Plants have the:-

- Ability to photosynthesize;
- Ability to disperse seeds or fruits;
- Ability to respond to stimuli;
- Ability to pollinate;

12. (a) –White colour;

-Reason: - Fewer numbers/lower ratio;

-Absence of white colour in parents;

(b) Heterozygous Rr or Rr x Rr;

(c) Double recessive /rr/ homozygous recessive;

13. (a) K –Has umbilical/vein which transport blood (rich in nutrients and oxygen); from the placenta to the foetus;

-Has umbilical artery which transport blood (with high concentration of metabolic wastes from foetus to the placenta;

L -Provides a fluid environment that suspends the foetus providing with support;

-Acts as a shock absorber thus protecting foetus against mechanical injury;

(b) The embryo is protected from external environmental conditions;

14. Caecum and appendix;

15.

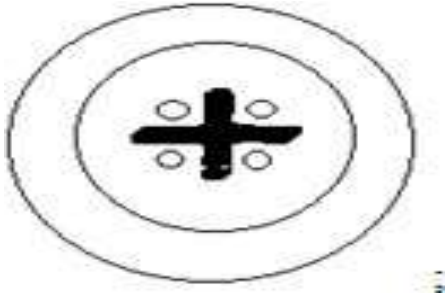
$$(a) R.Q = \frac{\text{Volume of } CO_2 \text{ produced}}{\text{Volume of } O_2 \text{ produced}};$$
$$R.Q = \frac{57}{80} = 0.7125; \quad (1\text{mark})$$

(b) - Fats require too much oxygen to be oxidized;

- Fat are not soluble;

16. (a) (i) Root;

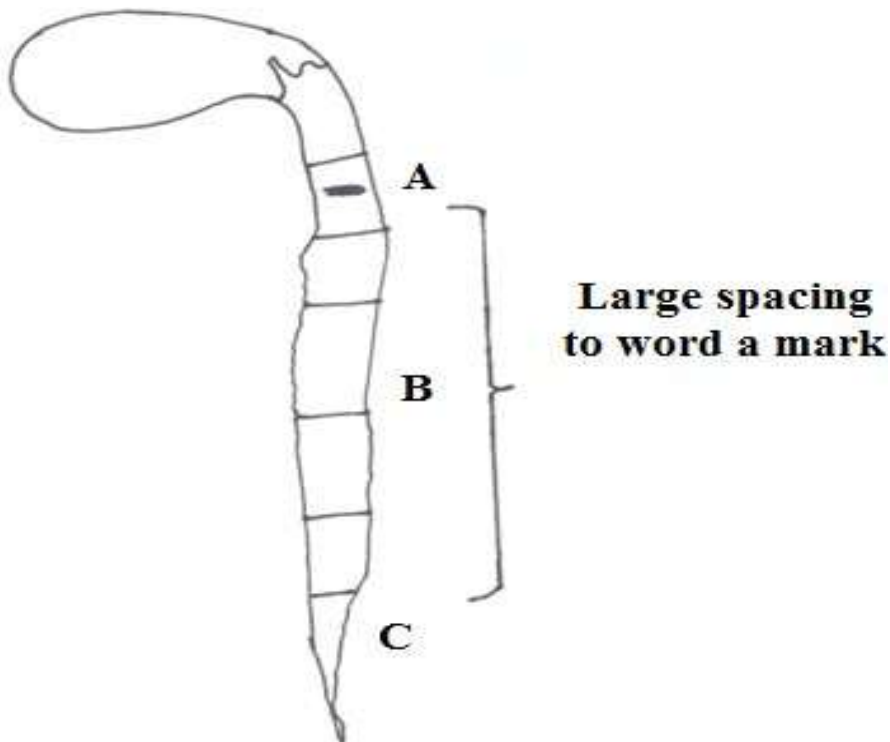
(ii) Xylem is star shaped at the centre (1)/ while phloem is between the arms of the xylem ;( 1)



17. (a) A- Region of cell differentiation;

B-Region of cell elongation;

C-Region of cell division;



18. (a) M- Primary consumers;

(b) I- Feeding;

**II-Decomposition;**

**III-Absorption;**

**(c) Decomposers/Decomposing bacteria/Fungi;**

**19. It reduces to surface area exposed; hence lowering the rate of transpiration;**

**20. - Thin walled/epithelium for faster diffusion of gases/to reduce distance of difficulty gases;**

**- Numerous to increase surface area for gaseous exchange;**

**- Highly vascularized for transpiration of gases/maintain a steep concentration gradient**

**21. (a) Centrioles;**

**(b) Lysosomes;**

**(c) Nucleolus;**

**22. A-Centrum;**

**B-Transverse process;**

**C-Neural spine;**

**23. A-B**

**- Rapid/faster increase in the rate of reaction; since there are more active sites of enzymes ;**

**( available for the increasing number of substrate molecules); B-C**

**- Constant rate of reaction; since all active sites are occupied;**

**24. (a) Auxins;**

**(b) The auxins caused more cell division/elongation; on the side of the coleoptile where it was applied then on the side it was not applied hence the curvature;**

**25. a) Diabetes insipidus;**

**(b) Antidiuretic hormone;**

**26. - Fossil records;**

**- Geographical distribution;**

**- Comparative anatomy;**

**- Comparative embryology;**

- Cell biology;
- Comparative serology; (any three correct) mark first three

27. (a) *Salmonella typhi*;

(b) *Candida albicans*/ *Candida vaginitis*;