

BIOLOGY PAPER 231/1 K.C.S.E 1997
MARKING SCHEME

1. (a) Golgi apparatus
Packaging of synthesized materials; Accept correctly named materials e.g glycoproteins
- (b) Ribosomes
Transport of the packed materials, secretion of packed materials;
Manufacture synthesis of proteins.
2. The animal belongs to the class – Arachnida;
3. Alcohol, carbon dioxide and energy;
- accept Ethanol, C₂H₅OH/CH₃H₂OH.
4. – Lignified thickened to prevent collapsing (Acc. Strengthened add strength)
- Narrow to facilitate capillary:
5. Cerebrum cerebral hemisphere/ cerebral cortex;
6. (a) Mosquito larvae/ Pupae are killed; Accept suffocation/ Breaking life cycle of Mosquitoes
- (b) Pollution of environment/ oil expensive, other aquatic are killed; accept Contamination.
- 7.

Biceps	Gut Muscles
Striated	Unstriated
Multinucleated	Uninucleated
Long Fibres	Short fibres
Cylindrical	Spindle Shaped

- 8 (a) Disease the person was suffering from
Diabetes insipidus ref. Diuresis/ water diabetes
- (b) Hormone that was deficient
Antidiuretic hormone/ ADH/Vasopressin
9. Fossil (records) paleontology; geographical distribution
Comparative anatomy/taxonomy; cell biology
Comparative serology; comparative embryology
Comparative immunology
10. Vitamin D- Rickets/Osteoporosis
Iodine- Goitre

SECTION B (40 MARKS)

11. (a) Grass → Grasshoppers → Guinea fowls
Grass → Termites → Guinea fowls
- (b) Lions would compete with leopards
Gazelle numbers would reduce
Grass would increase
- (c) Grass; rej. Plants
12. (a) Long sighted ness/ hypermetropia

- (b) Eye ball too short/ eye lens are unable to focus because they are flat/weak, unable to focus the image on the retina; eyes are unable to accommodate/ change their focal length
- (c) By wearing convex / biconvex lenses; accept converging lenses
13. (a) strong air/ winds
High temperature
Low humidity; accept dry conditions/ sunlight
- (b) Absence of leaves/ stomata absent
Transpiration; / little transpiration
- (c) Arid/dry/ desert/ accept semi- desert
Reason
Low rate of water loss; accept more/ a lot of water loss
Wet/Moist/aquatic
Reason
High rate of water/ high rate of transpiration /acc. A lot of water loss
14. (a) E- Denitrifying bacteria; e.g pseudomonas denitrifications
J- Nitrifying bacteria; Nitrobacteria reject nitrosamines
- (b) H- Death decay/ decomposition; excretion/ Aminonification putrefaction egestion.
F- Nitrogen fixation
- (c) Plants
15. (a) Deamination
- (b) Removal of excess amino acids availing energy in the body formation glycogen/ fat for storage.
- (c) Proteins
- (d) Essentials amino acids are acquired from food
Non- essential are synthesized in the body
16. (a) White
Give a reason – Fewer numbers/ lower ratio; lower in numbers/ absence of white in parents & absence in offspring.
- (b) Heterozygous Rr. Accept appropriate letters
Rejects R.w appropriate/ letters (o-dominance)
- (c) Double recessive /rr/ homozygous (recessive)
17. (a) Figure 1 R:
Figure 2 T: Accept growth
- (b) Development of the foetus/zygote/fertilized/ova/egg/embryo
- (c) Style
- (d) R;P;
- (e) X

SECTION C: (40 MARKS)

18. (a) (i) Bamboo plants
4 and 6
(ii) Maize plants
12 and 14
- (b) (i) Bamboo
(ii) It had accumulated more weight and therefore greater dry weight

- (c) Maize plants have reached maturity/maximum height food being manufactured (in green parts); is utilized for growth storage primary in the cob.
- (d) Increase in weight – bamboo reject both increase/ decrease accept bamboo and maize increase/ decrease.
- (e) (i) Dry weight instead of fresh weight
Fresh weight is dependant on the amount of water present in the plants and this fluctuates depending on environmental factors.

(ii) Weight and height

Both given a better measure of growth

- (f) Average height

At every 2 weeks measure the height of samples of plants in each plot:

Divide the total height by the number of plants in each of plot.

Average dry weight

Harvest the sample measure of the plants in each plot; dry to constant weight:

And divide by the number of plants

- (g) Being monocots/ lack (Inter) fascicular cambium:

- 19. (a) An association between two organism; where one benefits; and the other is adversely affected. Or an association where an organism lives in or on another living or organism: obtaining from it and causing harm without necessary killing it.
- (b) Has hooks/suckers: for attachment to wall of intestines: long; to increase surface area for absorption of food: award increase in S.A for absorption once. Secretes enzymes/to neutralize digestive enzymes; (mucus inhibitor substance/anti enzymes)
Hermaphroditic: to ensure reproductive/ self fertilization.
Production of many eggs: to ensure survival
Segment for egg dispersal:
More than one host; for transmission: e.g T solium – pig (Intermediate host) T. Saginata. Long to fit in the intestine/ increase surface area for (flatten) Absorption of food;
Anaerobic survive in the gut with low O₂.
- 20. (a) Breakdown of (complex) food substances by enzymes; to simpler compounds (which can be absorbed)
- (b) Small intestines are long/coiled: to offer large surface area for digestion and absorption:
The walls are muscular: for peristalsis/ inner walls posses mucus glands/ accept goblet cells that secretes mucus; for lubrication; and protection of wall from digestive enzymes:
The inner walls have digestive glands: that secret (digestive) enzyme:
The inner walls have villi: to increase surface area, absorption/ diffusion; accept ‘epithelium is one cell thick’

The Villi have numerous blood vessels: for transport of the end products of digestion; accept at least two correctly named examples/ end products of glucose amino acids/ mineral salts vitamins.

The villi also have vessels for transport of fats/lipids
Accept illustrations of cell are thick epithelium