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# **BIOLOGY PAPER 1**

## **ANSWERS**

### **KCSE 2010**

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## Biology Paper 1

1. (a) Cytology;  
(b) Microbiology;
2. (a) Stem;  
(b) (i) Monocotyledonae;  
(ii) Vascular bundles scattered/not arranged in a ring  
(c) Epidermis; (4 marks)
3. (a) Protein synthesis  
(b) Destroys worn out organelles and micro-organism; (2 marks)
4. (a) (i) Root hair cell;  
(ii) D – cell wall;  
E – cell sap vacuole;  
(b) Controls the functioning of the cell; (4 marks)
5. A large surface area for efficient diffusion of gases;  
Moist for gases to diffuse in solution form;  
Thin for efficient diffusion of gases across a short distance; (3 marks)
6. (a) Co-ordinates balance;  
(b) Controls heart beat/blood pressure/breathing rate; (2 marks)
7. Haemolysis – process by which red blood cells take in water till they burst;  
Plasmolysis – loss of water from a plant cell; (2 marks)
8. 

Chilopoda	diplopoda
A pair of walking legs per segment;	2 pairs of walking legs per segment;
Body flattened dorsoventrally;	Body cylindrical in shape;
Body divided into head and trunk	Body divided into head thorax and trunk;

 (3 marks)
9. They contain chlorophyll which traps light energy;  
They have grana which increase surface area for photosynthesis;  
The stroma has enzymes for photosynthesis;  
Any two (2 marks)
10. Resistance to diseases;  
Increased yields; (2 marks)
11. (a) Aquatic; (1 mark)  
(b) Large air space/aerenchyma to enhance transpiration;  
Sclereids for mechanical support of leaf;  
Stomata on upper epidermis to enhance transpiration;  
Any two (2 marks)

12. J – Sporangium;  
Absorption of soluble substances;  
Secretion of digestive enzymes; (3 marks)
13. (a) Place or environment in which specified organisms live;  
(b) A natural unit with abiotic and biotic factors; (2 marks)
14. Charcoal in limited supply of air produces carbon (ii) oxide; which combines with haemoglobin forming carboxyhaemoglobin;  
Leading to suffocation/death; (3 marks)
15. X – Starch present;  
Y – Starch absent;  
X – Acts as a control; Y – CO<sub>2</sub> absent absorbed by potassium hydroxide pellets;
16. Emulsification;  
Creating alkaline medium for digestive enzymes; (2 marks)
17. (a) Herbivorous;  
(b) Lack canines on upper Jaw/lack incisors on upper jaws; (1 mark)
18. Animals form water products more rapidly than plants;  
Animal wastes are more toxic than those of plants;  
Animals don't re-use their wastes while plants re-use some of their wastes;  
Any two (2 marks)
19. When temperature is high they dilate; when low they constrict; (2 marks)
20. Higher chances of fertilization;  
Embryo is protected from external environmental conditions; (2 marks)
21. (a) P – sutures;  
(b) (i) Atlas;  
(ii) Hinge joint; (3 marks)
22. (a) Passage of ova;  
(b) Storage of sperms;  
(c) Hold the testis; (3 marks)
23. Absence of nucleus; increase of space for packaging haemoglobin for carrying oxygen.  
Possession of haemoglobin which has high affinity for oxygen;  
Concave shape creates large surface area for combining with oxygen;  
Ability to change shape to enable them pass through capillaries (3 marks)
24. (a) Use and disuse;  
Acquired traits can be passed on to offspring;  
(b) Acquired characteristics cannot be inherited; (3 marks)

25. Overcrowding;  
Accumulation of toxic wastes;  
Limited resources such as nutrients; (3 marks)
26. (a) Provides support;  
Enables plants to grow towards light; Any one
- (b) In search of nutrients  
Anchorage; Any one (2 marks)
27. (a) Failure of homologous chromosomes to segregate during meiosis;
- (b) (i) Down's syndrome/Turner's syndrome/Klinefelter's syndrome; (1 mark)
- (ii) Albinism/single cell anaemia/haemophilia/colour blindness; (1 mark)
28. Arteries have thick muscular walls, veins have thin and less muscular walls;  
Arteries have narrow lumen, veins have wider lumen;  
Arteries have no valves except at junction with heart veins have valves at regular intervals; (3 marks)
29. (a) Gymnospermae;
- (b) Needle-like leaves (with waxy cuticle);  
Naked seeds; (3 marks)
30. The inhibition of growth of lateral buds;  
By auxins; produced by the growing apical bud; (3 marks)