KANGEMA/MATHIOYA FORM 4 JOINT EXAMINATION

BIOLOGY
Paper 1
July/ August 2016
MARKING SCHEME

1. Taxonomy - the science of classification *1 mk*
   Taxon - a unit of classification; *1 mk*
2. Ribosomes; *1mk*
   Goigi bodies; *1mk*
3. They have a tough and rigid cellwali / generate wall pressure equal and opposite to turgor pressure *1mk*
4. a) Transpiration: *1mk*
   b) i) Drop in water level;
      ii) No change in water level;
      iii) Slower/ very slow drop in water level;
5. a) Photolysis; *1mk*
   b) Glucose / oxygen / amino acids *1 mk*
   c) Magnesium;
      Nitrogen; *2mks*
6. a) Black mice are better adapted / camouflage with the environment hence less are eaten by the owls compared to the white mice which are easily seen and eaten; *2mks*
   b) Theory of natural selection; *1mk*
   c) Caecum and appendix;
      Coccyx; nictating membrane;
      Ear muscles; *first two (2mks)*
7. a) Blockage of pancreatic duct; hence
      pancreatic juice does not reach duodenum; hormones are secreted directly into the blood stream, hence regulation of blood sugar is not affected *3mks*
   b) emulsification of fat
      provide an alkaline pH for optimum function of pancreatic enzymes; *2mks*

8. a) Microscopic plants -» mosquito larvae small fish large fish crocodiles *1 mk*
   b) Large fish; *1mk*
      Mosquito;
   c) i) Microscopic plants;
      ii) Large fish / crocodiles; *2mks*
9. a) Short sightedness / myopia; *link*
   b) This defect can be corrected by wearing glasses with concave (diverging) lenses; these bend light rays outwards before they reach the eyes enabling them to be focused on the retina; *2mks*
      (accept a diagram showing correction of the problem)
10. a) Complete oxidation of lipids require a lot of oxygen; lipids are insoluble in water hence difficult to transport in the body
       complete oxidation of lipids take a longer time *any 2*
    b) - maltose
       - lactose *2mks*
11. a) K enzyme sucrose *1 mk*
       L enzyme inhibitor *1mk*
    b) - increasing substrate / enzyme concentration
    c) - eliminating enzyme inhibitors
       - ensuring optimum PH *3mks*
12. i) Oxidises food to release energy needed for germination; *1mk*
    ii) - stores food for the seed;
        - stores enzymes;
        - protects plumule (in some seeds); *any 1 point*
    iii) - hydrolysis of food
         - providing medium for respiration
         - transport of food *any 2*
13. a) Rhizobium bacteria *1mk*
    b) Symbiosis *1mk*
14. a) Effect of unilateral / undirectional light of shoots; *1 mk*
    b) Seedling /shoots growth towards light / growth curvature towards light; *1 mk*
15. a) Ulna; *1 mk*
    b) i) Humerus; *1 mk*
       ii) Hinge *1mk*
16. a) Ptyalin operates at optimum / slightly alkaline PH in the mouth; but in the stomach the PH is acidic due to HCL in gastric juice *2mks*

b) temperature above 40°C/ variation of PH from optimum; *1 mk*

c) - villi;
- being long;
- folded walls; *2mks*

17. a) To ensure optimum temperature for enzyme reactions; *1 mk*

b) low rate of respiration;
slow rate of activities; *2mks*

18. a) Carboxyhaemoglobin

Aerobic respiration	Photosynthesis
- uses oxygen	- gives away O_2
- gives out $C0_2$	- uses $C0_2$
- utilises carbohydrates	- forms carbohydrates

any 2

19. a) Root; *1 mk*

b) has root hairs

c) star shaped xylem at the centre with phloem in its arms; *any 1mk*

d) J – pilifetous layer
K – phloem
L – xylem *3 mks*

d) Absorption of water and mineral salts 1 *mk*

20. a) Structures with common embryonic origin; but perform different functions; *2mks*

b) Structures with different embryonic origin; but perform similar functions; *2mks*

21. a) - sclerenchyma;
- xylem;
- collenchyma; *any 2*

b) i) X - biceps; *1mk*
Y - triceps; *1mk*
rej. flexor and extensor

ii) X (biceps) relaxes; as Y (triceps) contracts *2mks*

c) Hinge joint *1mk*

22. - increase rate of respiration
- speeds up the heart beat rate *2 mks*