KENYA CERTIFICATE OF SECONDARY EDUCATION.
BIOLOGY PAPER 1 (231/1)- MARKING SCHEME (100MRKS)

1. Presence of ribosomes for protein synthesis;
   Presence of channels for transport of proteins and other substances; (1mk)
2. Number of wings
   -number of legs and other appendages;
   -number of body parts;
   -type of eyes (simple or compound) max;1mk each
3. Diffusion is movement of particles(ions ,molecules) from where they are more to where they are few against a diffusion gradient ;(1mk)
   Active transport is the movement of ions/molecules from where they are few to where they are more using energy against a concentration gradient; (1mk)
4. i.Upper jaw = 8x2=16
   ii.Lower jaw=7x2 =14
   30;(1mk)
   Or (2+5+ 8) x 2 = 30 teeth.
   iii.Herbivorous ;(1mk)
   it has the molar, premolars and incisors except canines ;(1mk)
5. a.To increase the surface area over which gases will diffuse;Acc.oxygen or carbon (vi) oxide for gases.(1mk)
   b.Carbonic anhydrase;
6. a.Vitamin K;
   Thrombokinase /thromboplastin;
   Calcium /calcium ions; (½mk)
   b.Heparin is a chemical substance that prevents blood form clotting within the blood vessels;(1mk)
   Histamine is a chemical substance that is produced by tissue cells after an injury/sting/allergic reaction ;(1mk)
7. a.Modulla oblongata;(1mk)
   b.the nostrils have a mucus lining that traps dust unlike the mouth;
   Nostrils have cilia that facilitate the movement of dust particles outwards;
   Nostrils have chemoreceptors for detecting smells/chemicals unlike the mouth ;(max 2=2mks)
8. a. Energy/ATP;(1mk)

   b.A-Matrix;
   B- Cristae;
   C.Outer membrane;
   D-Inner membrane; (½mk @ max 2mks)
9. a. Little or no insulin in the blood;(1mk)
   b.Boil a little urine sample with Benedicts solution; an orange precipitate confirm presence of sugar in the urine;(2mks)
10. a. Ecological niche-the position an organism occupies and the role itpalys in a habitat;(1mk)
    b.Habitat – a specific place where an organism lives/adapted to live ;(1mk)

11. a. Diaphragm – regulates the amount of light passing through the specimen;(1mk)
    b.Objective lenses-for magnification of the specimen;(1mk)
12. a. Respiratory quotient-the ratio of the volume of carbon (iv)oxide produced to that of oxygen used in a respiratory process;(1mk)
    b.(i)R.Q =$70cm^3$= 0.7;(1mk)

ii.Lipid;(1mk)

13. a.An increase in amount of haemoglobin,an increase in the number of red blood cells;(2mks)
    b.To increase the surface area for transport of oxygen/to increase the volume of oxygen in the body/to trap more oxygen;(1mk)
14. A greater number of chloroplasts that trap light of low intensity;
    Their leaves are highly dissected /branched to increase the surface area for photosynthesis;
    Epidermis has chloroplasts; (max 2=2mks)
15. Bacillus anthracis;(1mk)
    Neisseria gonorrheae;(1mk)
    Bordetalla pertusis;(1mk)
16. Due to anaerobic respiration; hence production of ethanol in the roots; which kills them and the whole plant;(3mks)
17. a)A and B ;(1mk each)
    b)They may be transfused with all other blood group's they lack antibodies ˚aa̰nd˚ b̰;max (2mks)
18. thermoregulation/regulation of body temperature;
    Osmoregulation/regulation of water and salts.
    Blood sugar regulation ;(3mks)
19. a.are elongated to increase the surface area of absorption;
    their hypertonic sap enables osmosis to take place;
    Presence of a thin cell membrane to quicken diffusion ;(max 2=2mks)
    b.Translocation ;(1mk)
20. a.to reduce diffusion distance of carbon (iv) oxide /reduce the penetration distance of light;
    b.for gaseous exchange /store gases;
    c.allows gaseous exchange /allows transpiration to take place;
    a.(1mk)
21. a. Secondary consumer;(1mk)
    b.(i) Grass ⟶ antelopes ⟶ lions ⟶ vulture;
    ii)Grass ⟶ caterpillars ⟶ Guinea fowl ⟶ Vulture;(1mk)
    c.i) Grass;(1mk)
    ii)Many organism's depend on it for food/energy, being the primary producer;
    -energy is lost during its transfer to higher levels through respiration, excretion and defecation ;(2mks)
22. Low temperatures inactivate enzymes;
    -increase in temperature up to the optimum increase the reaction rate/turn over;
    -higher temperatures above the optimum denatures enzymes;(3mks)
23. A.Desert/semi a desert; cc.arid/semi-arid areas;rej. Dry areas(1mk)
    B.Presence of large and succulent leaves;
    -pressure of thorns /prickles ;(2mks)
24. a.X; (1mk)
    b.Has fewer stomata on both sides of the leaf than Y;(1mk)
25. 1)a.Animal a mammal ……hyena;
    b.Animal not a mammal…… go to 2;

    2)a.Animal with body covered with feathers…….. Bird;
    b.Animal with body not covered with feathers…….. go to 3(1mk)

3)a.Animal with legs……..lizard;(1mk)
b.Animal without legs……snake ; (1mk)

Acc.any other correct
Key.

26. i.Defense against infections;
ii.Distribution of heat;
(1mk each)

27. a.i)Trachea; (1mk)
ii) Lungs (1mk)
iii)Rib cage;(1mk)
iv) Diaphragm;(1mk)

b.Volume in the bell jar will increase ; and pressure will decrease in the bell jar;air will rush into the lungs filling them /inflating them;(3mks)

28. a.i)A- Afferent arteriole;
B-Efferent arteriole;
C-Glomerulus ;
D-Bowman's capsule;(½mk=2mks)

ii. C- Blood;(1mk)
D- Glomerulus filtrate ;(1mk)

iii.Ultrafiltration ;(1mk)

iv.The fluid in C contains blood cells and large protein molecules while the fluid in D does not;(1mk)

29. They interbreed to give rise to fertile offspring;(1mk)
30. a. The visking tubing is semi permeable; and allows the small glucose molecules into boiling tube by diffusion;(2mks)
b.(i) the volume of the liquid in the boiling tube decreased .(1mk)
ii) The volume of the liquid in the visking tubing increased ;(1mk)
31. are moist to dissolve gases;
-have a dense network of blood capillaries to transport gases;
-They have thin membranes/thin epithelium to reduce the diffusion distance;
-They have a large surface area for transport of more gases;
1mk each=3mks
32. a.Deamination;(1mk)
b.Helps to regulate the amount of proteins /amino acids in the body;(1mk)
c.Liver (1mk)