FORM 4 BIOLOGY PAPER 1
THEORY PAPER MARKING SCHEME.

1. (a) Packaging and transport of materials;
   -formation of lysosomes;
   -synthesis of cell secretions
   Any 2 @ (1mk)
   (b) – synthesis of ribosomes ;(1mk)
2. Are lignified /thickened to prevent inward collapsing;
   -have long and narrow lumen to facilitate capillarity;
   -are made of dead cells to ensure passage of water;
   Any 2@ (1mk)
3. (a) 0+0+3+3=6x2 = 12
   3+1+3+3=10x2 = 20
   32 teeth; (1mk)
   (b)-herbivorous ;(1mk)
   -Lack of canines /incisors on the upper jaw/has a horny pad of gum on the upper jaw for biting ;(1mk)
4. (a) Tracheole;(1mk)
   -moist to dissolve gases;

-are thin walled to shorten diffusion distance;

Branched to increase surface area for gaseous exchange;

Any 2@ (1mk)

5. (i) Mycobacterium tuberculosis (1mk)
   (ii_ Bodetella pertusis;(1mk)
6. –to increase oxygen supply to tissues to oxidize lactic acid;
   -to remove it from the tissues as it is poisonous;
7. (a) Diabetes insipidus;(1mk)
   (b) Anti-diuretic hormone ;(1mk)
8. $\frac{\cancel{4800}}{\cancel{40}}$; = 120 micrometers;(1mk)
9. The Rh- antigen of B+ person caused production of Rh – antibodies by B- person against them; resulting in agglutination in B- blood; (2mks)

10. Open **closed**

i)fluid not transported through vessels	Blood transport through vessels
ii)Fluid makes direct contact with tissues	Blood not in direct contact with tissues
iii)Fluid transported at low pressure	Blood transported at high pressure.

11. (a) A goat has a larger S.A/V ratio than a mouse hence loses heat at a lower rate than the mouse;
    (b) Lactic acid ;(1mk)

12. (a) sporangium;
    (b) Absorption of water and mineral salts;
    (c) Fungi ;(1mk)
13. (a) $\frac{500 \times 380}{95}$; 2000 frogs;(1mk)
    1mk

    (b)- There was no movement in or out of the pond by the frogs;
    -that the marked frogs were evenly distributed in the pond;
    -that the marked frogs mixed freely with others not marked;
    Any 2mks
14. -Portogyny;
    -self sterility;
    -brightly coloured petals/bracts;
    -production of sweet scented nectar to attract pollination agents;
    Any 3(3mks)
15. –adults and larvae feed on different foods to avoid competition;
    -pupa can survive adverse conditions /pupa can survive adverse conditions as it does not feed;(2mks)
16. (a) (i) A group of superior characteristics in an organism resulting from a cross between unrelated organisms;
    (ii) Where an individual has more than two sets of chromosomes ;(1mk)
    (b) X-rays /u.v light/gamma rays /alpha particles.Acc Radiations alone.
    -Colchicine; Rej.chemicals alone.
    -Lead /mercury; rej. Metals alone
    Acc.Heavy metals.
    -Papilloma virus;
    Any 2 @ (1mk)
17. (a) –Helps to perpetuate advantageous characteristics;

-Helps to eliminate disadvantageous characteristics ;(2mks)

(b) Disease causing micro-organisms mutate after repeated exposure to the chemical; and transmit this mutation to their offspring during reproduction (2mks)

18. (a) scales;(1mk)

(b)-Most have their cells made of chitin;

-most reproduce by sporulation/production of spores;

-are eukaryotic;

-some are saprophytic and others are parasitic;

-their basic unit is the hypha;

-they store food as glycogen and oil droplets.

Any 2 @ 1mk

19. –presence of glucose in urine;

-a feeling of thirst constantly;

-Frequent urination;

-Weight loss

-Loss of sight

-Unhealing wounds; any 3@ 1mk

20. (a)inner membrane is highly folded to form crystae to hold more respiratory enzymes;

- Presence of enzymes for respiratory reactions(2mks)

(b) Pyruvic acid ;(1mk)

21. (a)the fluid formed in tissues by ultra-filtration and lacking blood cells and plasma proteins;

(b) It supplies nutrients and oxygen to tissue cells;

-it is the medium of exchange between blood capillaries and tissues cells; (2mks)

22. –humidity;

-temperature;

-atmospheric pressure;

-light intensity

-wind Any 2 @ 1mk

23. (a) protection of the stomach wall from hydrochloric acid and digestive enzymes ;

-to lubricate food ;(2mks)

(b) Due to the low pH/acidic medium which affects enzyme amylase ;(1mk)

24. (a) Epigeal germination;(1mk)

(b) to protect the plumale;

-to elongate and pull the cotyledons above the ground ;(2mks)

25. (a) –it is failure of homologous chromosomes to separate during meiosis /anaphase I hence chromosomes enter a common gamete;(1mk)

(b) -body height;

- Skin colour;

Weight;
Finger prints
Any 2 @ (1mk)

26. (a) – Oestogen;
-Progestone 2mks
(b)Androgens (1mk)

27. – population density;
- Population distribution/dispersion;
- Age structure
- Population growth
- Sex ratio any 3 @ 1mk

28. (a) Young people are active and grow rapidly hence need more energy for cell division/growth;(1mk)
b) Manual work requires more energy than simple work ;(1mk)
(c) Males are more muscular than females of the same age hence require more energy ;(1mk)

29. An increase in temperature activates the respiratory enzymes ;which increases energy for active transport;(2mks)

30. (a) –they are flexible /are able to change shape to fit in the human of the capillary;
(b) Have haemoglobin to trap oxygen;
-They have an enzyme called carbonic anhydrase to speed up loading of carbon (iv) oxide gas.
Have a disc –shape to accommodate more haemoglobin lack a nucleous to pack more haemoglobin;
Have a thin membrane for faster diffusion of gases;
Any 2 ½(1mk)