**MWAKICAN JOINT EXAMINATIONS**

**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)

1. 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)

1. (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)

1. (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)

1. (i) Mycobacterium tuberculosis (1mk)

(ii\_ Bodetella pertusis;(1mk)

1. –to increase oxygen supply to tissues to oxidize lactic acid;

-to remove it from the tissues as it is poisonous;

1. (a) Diabetes insipidus;(1mk)

(b) Anti-diuretic hormone ;(1mk)

120

1. $\frac{4800}{40}$ ; = 120 micrometers;(1mk)
2. The Rh- antigen of B+ person caused production of Rh – antibodies by B- person against them; resulting in agglutination in B- blood; (2mks)
3. **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. |

1. (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)

1. (a) sporangium;

(b) Absorption of water and mineral salts;

(c) Fungi ;(1mk)

1. (a) 500 x 380; 2000 frogs;(1mk)

 95 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

1. -Portogyny;

-self sterility;

-brightly coloured petals/bracts;

-production of sweet scented nectar to attract pollination agents;

 Any 3(3mks)

1. –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)

1. (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)

1. (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)

1. (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

1. –presence of glucose in urine;

-a feeling of thirst constantly;

-Frequent urination;

-Weight loss

-Loss of sight

-Unhealing wounds; any 3@ 1mk

1. (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)

1. (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)

1. –humidity;

-temperature;

-atmospheric pressure;

-light intensity

-wind Any 2 @ 1mk

1. (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)

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

(b) to protect the plumale;

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

1. (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)

1. (a) – Oestogen;

-Progestone 2mks

(b)Androgens (1mk)

1. – population density;
* Population distribution/dispersion;
* Age structure
* Population growth
* Sex ratio any 3 @ 1mk
1. (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)

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