FORM FOUR CLUSTER KCSE MODEL1

BIOLOGY PAPER 1 ANSWER

1. (a) Harmful insects; acc. Stinging insects; poisonous;

   (b) Entomology;

2. (a) Arthropoda; rej. Arthropods, Anthropoda, starting with small letter.

   (b)-Segmented body;

   -Jointed appendages;

   -Open circulatory system; (any 2)

3. - Promote cell division;

   -Promote cell elongation;

4. (a) Carbonic anhydrase;

   (b)For their body to manufacture more red blood cells; for efficient transport of oxygen in their bodies;

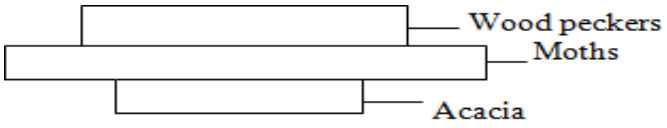
5. (a) Geotropism;

   (b)More auxin on lower side due to gravity inhibits growth; hence slower growth on the lower side/faster growth on upper side; causing the curvature;

6. (a) Cell cytoplasm and salt solution concentration equal/isotonic; hence no change in number;

   (b) Salt solution hypotonic to cell cytoplasm; hence some cell burst causing number of cells to reduce;

7. a)



N/B Drawing 1 mark
Labelling 1 mark

   b)- Prevent entry of oxygen;
   -Clog respiratory surfaces of aquatic organisms in the water;

8. These are organisms whose genes are manipulated; to produce desired characteristics;

9. Starch absent; starch was digested by salivary amylase; to simple sugars/ reducing sugars;

10. (a) C-Vertebral column;

    D-Sternum;

    (b) More upwards;

11. -Oxygen gas is excreted; OWTTE
    -Hydrogen ions produced enter reactions in the dark stage;

-ATP/Energy is formed is used in dark stage;

12. –Synthesis of new organelles;

    -DNA replication;

    -Build up enough energy stored in form of ATP; to take it through entire division process;

13. -Twinning/using tendrils to climb woody plants/hard surfaces to reach light;

    -Cell turgidity;

14. (a) Q-Anaerobic respiration;

    T-Aerobic respiration

    (b)-A- Pyruvic acid;

15. (a)(i) Hypogeal;

    (ii)The cotyledon remains below the soil;

    (b)Protects the first foliage leaves/plumule;

16. (a) This are genes located on the sex chromosomes and are inherited together with those determining sex;
    (b)Most sex-linked traits genes are located on the X chromosome;

    Male have one X- chromosome while female have 2 X –chromosome;

17. -Thermoregulation/Distribution of heat;

    - Osmoregulation/Salt-water balance;

    -Regulation of pH;

18. (a) (i) Radius;

    (ii) –Offer large surface area for attachment of tendons/muscles;

    -Prevent overstretching of the forearm at the joint;

    b) Humerus; (any 1)

19. (a) Transfere genetic information from the nucleus to the ribosomes;

    (b) U — C — G— A— U;

20. (a) –Production of ovum;

    -Secretion of female sex hormones/progesterone/oestrogen;

    (b) –Lined with cilia which waft the ovum/blastocyst towards the uterus;

    -Has smooth muscles which contract and relax to aid movement/propulsion of the ovum/blastocyst./zygote;

21. a)

$$R.Q = \frac{Volume\ of\ Carbon(IV)\ Oxide\ produced}{Volume\ of\ oxygen\ consumed}$$

$$\frac{9.3}{9.1};$$

$$= 1.02;$$

(b) Carbohydrates/sugars/starch;

22. (a)Acquired characters;
(b) Lamarck's theory;
(c) Phenotypically acquired characteristics do not affect the genotype and therefore cannot be inherited;

23. (a) -To growing regions/shoot apex/root apex;
-To storage organs/roots/stems/seeds/fruits;
-To secretory organs; e.g. nectar glands (any 2)

(b) Hollow to allow smooth movement of water narrow to increase capillarity;
-Lignified not to collapse;
-Narrow to aid capillarity;
-Bordered pits allow lateral movement of water;

24. Salt concentration increases blood osmotic pressure; more ADH is produced; more water is reabsorbed in the kidney tubules; hence small amount of concentrated urine produced;

25. Homologous structures have same embryonic origin but adapted for different functions;

Analogous structures have different embryonic origin but adapted for same function.

26. Excess amino acids are deaminated in the liver;
The amino group is converted to ammonia; to which carbon (IV) oxide is added to form urea;

27. Centriole-formation of spindle fibres/ cilia/flagella; (any 1)

Nucleolus –formation of ribosomes;

Production of nucleic acid to form RNA. (any 1)

28. Diffusion; Exudation; transpiration; leaf fall (any 1)

29. Gonorrhea-Neiseria gonorrheae;

Pneumonia- Streptococcus pneumoniae;

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$$Magnification = \frac{Drawing\ length}{Object\ length\ (x)}$$

$$2 = \frac{5}{y};$$

$$y = 2.5cm;$$