

**BIOLOGY PAPER 231/1 K.C.S.E 1996**  
**MARKING SCHEME**

1. - Controls/regulates/ enzymes/ synthesis is the material for inheritance
2. - Sexual transmitted  
- Blood transfusion  
- Sharing needle/syringes/ razors
3. After vigorous activity when blood fall below normal
4. scurvy
5. Arthropoda
6. Capable of interbreeding; to produce viable offsprings
7. (a) To split water/ Photosynthesis/hydrous  
(b) Glucose/carbohydrate/ starch/ sugar.
8. Store chemical salts/sugar/blood/; maintain shape of cell. Osmotic gradient the bring about movement of water.
9. Presence of special structure that attract agent of pollination protandry; protogyny; monoecism; self – sterility.
10. (a) O<sub>2</sub> is necessary for germination  
(b) Germination in B; no fermentation
11. Gametes form new offspring
12. To increase the chances of fertilization and survival of species

**SECTION B**

13. (a) Drive out oxygen / air  
(b) Avoid killing yeast cells/ denaturing enzymes in yeast  
(c) To prevent air from getting into the glucose and yeast Suspension  
(d) Limewater turns milky  
(e) Used boiled yeast on glucose
14. CO<sub>2</sub> diffuses into tracheoles follows the trachea; not through spiracles  
Stomata pores / stomata; cuticle  
Acc. Lenticels.
15. (a)  $\frac{374 \times 400}{80}$   
(b) - There was even distribution of crabs  
- No movement in and out of regions; no migration  
- There was random distribution of errors after the first capture.  
(c) – Capture/ recapture; capture release recapture.
16. (a) – Phototropism  
(b) Auxins / hormones; move diffuse to the demised/ away from the light side; causing elongation/ growth on the dark sides hence bending
17. (a) Anaemia/ low blood volume/ loss of iron/ low red blood cells/ low haemoglobin; leading to low oxygen; loss of nutrients and dehydrations.  
(b) Blood clotting  
(c) Transfusion; taking fluids) eating iron rich food stuff/ taking iron tablets.

18. Parents                      Bb    x    Bb

Gametes                      B        b        B        b

F<sub>1</sub> generation              BB    Bb    Bb    bb

(b) 3 black                  1 brown

19. (a) K- Root hair  
L- Xylem vessel

- (b) Water moves from the soil into the root hair by osmosis; because concentration of cell sap is higher than water in the soil; the cell sap in the root hair is diluted, thus making it less concentrated than neighboring cell; therefore water moves into the neighboring cell; it is actively secreted into structure L.
- (c) Active transport/ diffusion

### SECTION C

20. (a) 10 HRC and 31 HRC

(b) (i) A and B

The number of bacteria dividing are few; bacteria are adjusting conditions; few are dying therefore high increase in population

(ii) B and C

More cells are dividing due to suitable environment/ favorable conditions; few are dying; therefore high increase in population

(iii) C and D

No population change; number produced is equal to number dying.

(c) Accumulation of toxic wastes; that kills bacteria; depletion of nutrients leading to competition of space.

(d) (i) The population will remain the same

(ii) Temperature not conclusive for division

(g) – Food to be sufficient for population

- Social amenities/ education; health services

21. The cornified layer is made up of dead cells, that prevent entry of bacteria and prevent physical damage; melanin protects the body against U-V variation; sebaceous glands produce a chemical/ ring substance which is of blood vessel; which when the body temperature is high dilate and heat is lost or when body temp is low blood vessels constrict. And heat is retained. Hair when it is called, stands and traps air between themselves; to retain heat/ stop heat loss or when it is hot hair lies flat close on the skin; so does not trap air, and therefore heat is retained and sweat is lost; the skin has sweat glands which produces sweat; sweat evaporates thus cooling the body.

22. Lower plants/example Bryophyta/pterophyta; produces spores which develops to new plants; budding an overgrowth arises from plant drop off; and develops into a new plant; common in lower plants yeast.
- Fragmentation – e.g Spirogyra; breaks off and grows into a new plant
  - Vegetative propagation: common in higher plants involves growth of new plants from buds/bubils
  - Root stem/ tubers/ leaves: possesses buds; which develops to new plants
  - Corns; have terminal buds that grows vertically and produce a new plant
  - Runners; have lateral buds that produce new plants

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