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**CEKENAS END OF TERM TWO EXAM-2022**

**FORM FOUR EXAM**

*Kenya Certificate of Secondary Education. (K.C.S.E)*

***Biology paper 1***

***231/1***

***Marking scheme***

1. Ferns – have clearly defined vascular systems; show clearly defined sexual reproduction independent of water;

2. Field of view = 4mm

Field of view = 4x1000 = 4000µm;

Size of cells = $\frac{Field of view }{Number of cells}$;

 = ;

3. a) Myotomes – The muscle blocks of myotomes contract and relax bringing about movement;

b) Swim bladder – provides fish with buoyancy by adjusting its vertical position in relation to depth of water;

4, a) Collenchyma;

b) Sclerenchyma/ xylem tissues;

5. a) Short sightedness/ myopia; reject short sighted

b) Wearing glasses with concave (diverging) lenses; this bend light rays outward before they reach the eyes enabling them to be focused on the retina;

(Accept a diagram showing correction of the problem)

6. a) Convergent evolution;

b) Analogous structures;

 c) Coccyx;appendix; ear muscles;

7. a) Mutation is the spontaneous change in the genetic make-up of an individual;

b) Colour blindness; Albinism; Haemophilia; Sickle cell anaemia

8. a) Negative geotropism;

b) Gravity causes high concentration of auxins on the lower part of the shoot; this causes faster elongation of cells on the lower part compared to the upper part; making the shoot to curve upwards;

9. a) Calf has a large surface area to volume ratio than the adult; hence the calf loses more heat than adult;

b) Elimination of uric acid requires less water than ammonia; hence more water is conserved; uric acid is less toxic than ammonia hence safer to excrete where there is less water;

10. i) Active transport;

ii) Diffusion;

11. a) Secretin;

b) Cholecystokinin;

12. a) Streptococcus pneumoniae;

b) Mycobacterium tuberculosis;

(Binomial nomenclature rules must be followed)

13. a) Oestrogen – repair and healing of the endometrium;

b) Luitenising hormone – stimulates maturation of graafian follicle/ stimulates corpus luteum to produce progesterone;

c) Progesterone – stimulates thickening and increased blood supply;

14. Protandry;

Protogyny;

15. a) Respiratory quotient – Volume of CO2 produced

 Oxygen used up

 = 

 = 0.7;

b) Fat/lipid;

16. Causes cancers such as bone tumours and Leukemia; increased mutations leading to abnormalities, some inheritable;

17. a) Father – BO;

Mother – AO

b) OO;

c) A, B, AB; (All three must be mentioned)

18. a) Lysosomes ;

b) Golgi apparatus/ body ;

19. Diffusion; Exudation; Guttation; storage

20. a) Nitrogen fixation by lightning;

- Nitrogen fixation by free nitrogen fixing bacteria;

- Nitrogen fixation by symbiotic fixing bacteria;

21. a) Protect the apical meristems; (of the root)

b) Zone/ region of cell differentiation;

c) Dense cytoplasm; thin cell walls; no vacuoles; prominent nucleus; numerous mitochondria;

22. a) Juvenile hormone;

b) Abscisic acid;

23. a) Magnification = eye piece lens magnification x objective lens magnification;

b) Magnification = $\frac{Drawing length}{Actual length}$;

24. i.a) Adrenaline;

b) Source – adrenal glands;

ii) a) Circulatory system – increases the rate of heartbeat;

b) Respiratory system – increases the breathing rate;

25. i) Cilia – moves mucus upward into the pharynx; reject traps dust

ii) Mucus – traps and filters the microorganism and dust particles;

iii) Rings of cartilage – makes the trachea open/ prevent it from collapsing;

26. This is because of the ability of the plasmodia to rapidly change its coat surface antigens; resisting drugs meant to kill them; and pass this characteristics to its off springs;

27. a) Cerebrum;

b) Pituitary gland;

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| Bicep muscles | Muscles of the gut |
| - Are striated- They are voluntary muscles- Contract and fatigue rapidly | - lack striations;- They are involuntary muscles;- Contract and fatigue slowly; |

29. a) Photosynthesis;

b) A- negative test/ starch absent;

B – Positive test/ starch present;

c) To act as a control experiment;