

TERM 2 - 2023

BIOLOGY - PAPER ONE (231/1)

FORM FOUR (4)

MARKING SCHEME

1.	a) Hygrometer;	1x1=1 mark
	b) Generates its own energy; and recycles its nutrients;	2x1=2 marks
2.	Enabled identification of defective genes thus easen their correction;	
	Enabled identification of genes susceptible to diseases to easen their prevention;	
	Offers opportunity for production of drugs/vaccines since researchers are able to predic	et protein
	produced by specific genes; Mark 1st TWO	2x1=2 marks
3.	a) Dissolve respiratory gases for easier diffusion;	1x1=1 mark
	b) Offer a shorter diffusion distance for respiratory gases hence faster diffusion;	1x1=1 mark
4.	a) Entamoeba histolytica	1x1=1 mark
	b) Vibrio cholera reject wrong spellings/Not Underlined separately/Lower	case 'E'/'V'
		1x1=1 mark
5.	a) Arginase;	1x1=1 mark
	b) Q requires less water for excretion; since it is less toxic;	
	Ammonia is toxic; thus would have required more water to be excreted;	2x1=2 marks
6.	i) Gives pure insulin/No contaminants/Impurities thus no allergic reactions; Faster means of	
	production/Produces larger quantities; Mark Any 1	1x1=1 mark
	ii) Prevent digestion since insulin is protein in nature;	1x1=1 mark
7.	a) Lost function; thus smaller in size;	1x1=1 mark
	b) Absorption of water molecules into the blood;	
	Passage of undigested materials to the rectum;	2x1=2 marks
8.	a) Diuresis/Diabetes insipidus;	1x1=1 mark



1x1=1 mark

1x1=1 mark

1x1=1 mark

1x1=1 mark

9. a) Leads to developments of adaptations that enhance survival; 1x1=1 mark b) S Consumes protein; that requires a shorter time to digest; or T consumes fiber/cellulose-rich food; 2x1=2 marks that require more time to digest; 10. a) B; b) More active; Can live in any habitat; 2x1=2 marks 11. a) Centriole; 1x1=1 mark 1x1=1 mark b) Mitochondria: 12. a) Taxis/Tactic/Hydrotaxis/Positive Hydrotaxis; 1x1=1 mark b) Avoid dessication/Conserve water; 1x1=1 mark 13. a) Heterodont dentition/Teeth of different sizes/functions; 1x1=1 mark b) Protect brain/eyes/ear/tongue/organs in the head region; Attachment of facial muscles; Enable movement in the head region; Mark 1st 2 2x1=2 marks 14. a) i) Q/R; 1x1=1 mark ii) P; 1x1=1 mark 1x1=1 mark b) Brightly coloured/large/conspicuous to attrack insects for pollination; c) Chemotropism; reject Chemotrophism 1x1=1 mark 15. a) Photosynthesis; 1x1=1 mark b) Highest amount/Number of bubbles/40 bubbles produced per 30 seconds; More light/Closer to light source; Thus higher rate of photosynthesis; 3x1=3 marks



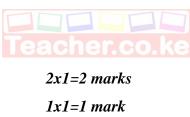
b) Sickle Cell Trait;

c) i) AT;

16. a) Defends body against pathogens/infections/diseases;

b) Goitre;

reject Sickle Cell/Sickle Cell Anaemia



ii) AA, AT, AT and TT; ACCEPT AA, AT and TT

d) They are tolerant/have mild resistance to malaria;

- 17. a) Efficient supply of Oxygen to tissues/Removal of Carbon (IV) Oxide (Since there is no mixing of blood rich in Oxygen and that which is rich in Carbon (IV) oxide);
 1x1=1 mark
 b) Higher chances of advantageous variations due to crossing over of genes, thus greater adaptations to
- 18. Longer loop of Henle thus increases surface area for water reabsorption; Fewer glomeruli thus reduce surface area for ultrafiltration; Secretes uric acid that requires less water for excretion; 2x1=2 marks
- 19. a) Enable vision in both low/dark and high/day light intensity;

1x1=1 mark

b) i) B;

1x1=1 mark

ii) Lacks retinal convergence/Each cell is linked to its own neurone thus brain receives more accurate information on objects;

1x1=1 mark

20. 10cells measure 5mm

1 cell will measure (1 cell X 5mm)/10cells

= 0.2 mm;

1 mm = 1000 micrometers

Thus $0.2\text{mm} = (0.2\text{mm } \times 1000\text{micrometers})/1\text{ mm}$;

= 200 micrometers;

3x1=3 marks

21. a) i) Secretes testosterone/Androgens;

1x1=1 mark

- ii) Manufactures Spermatozoa/Male reproductive cells/Male gametes; secretes androgens that cause secondary sexual characteristics/spermatogenesis; *1x1=1 mark*
- b) Reduce amount of heat in the testis/Create a conducive/optimum temperature; for efficient spermatogenesis/sperm-formation; 2x1=2 marks
- 22. a) Cotyledon is above the ground; Elongated hypocotyl;

1x1=1 mark



b) Prevent destruction of the delicate apical buds of the shoot (as it pushes through the soil);

1x1=1 mark

23. a) Colchicine; *1x1=1 mark*

b) Chemotherapy; Radiotherapy; Surgery to remove tumor in the lungs; MARK 1st 2 2x1=2 marks

- c) Enzyme Broke down starch into sugar molecules; More sugar molecules inside the visking tube than the surrounding water; a concentration gradient resulted and **sugar** molecules **diffused** into the surrounding water; 3x1=3 marks
- 25. Allograft is a graft/part of organ/tissue/organ transplanted to another person who is not genetically identical to the donor; Autograft is a graft obtained from the self; 2x1=2 marks
- 26. Life came into existence from combination of chemical substances; The initial life forms were simpler but changed over years to current complex ones;

 2x1=2 marks
- 27. a) Is a substance that causes an allergic/hypersensitive reaction;

1x1=1 mark

b) Presence of an allergen leads to body/immune cells releasing antibodies; the resulting antibodyantigen reaction leads to cells to burst and release histamine; which increase permeability of epithelial cells causing fluid accumulation thus swellings/as well as inflammation and pain;

3x1=3 marks

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