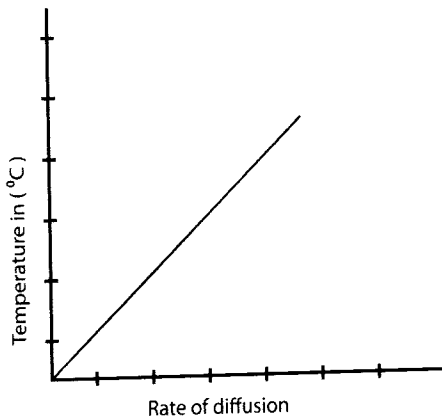


4.5 BIOLOGY (231)

4.5.1 Biology Paper 1 (231/1)

1.	Species;	(1 mark)
2	a) (Asexual) reproduction;	(1 mark)
	b) Irritability/sensitivity/response to stimulus;	(1 mark)
3.	(Most dense forests) form canopies/shadows; which prevent light from reaching grass (on the ground); grass die/fail to flourish due to their inability to photosynthesize; Any two	(2 marks)
4.	<ul style="list-style-type: none"> • A cell wall is (fully) permeable while a cell membrane is semi-permeable/cell wall has large pores while cell membrane has smaller pores; • A cell wall is (mainly) made up of cellulose (fibres) while a cell membrane is a double protein layer sandwiching a lipid layer; • The cell wall is rigid/tougher, (cannot burst) while the cell membrane is weaker, (bursts); Any one	(1 mark)
5.	a) Fungi;	(1 mark)
	b) Saprophytism /feed on dead/decaying (organic) matter;	(1 mark)
	c) (i) Hyphae/mycelium/rhizoids;	(1 mark)
	(ii) <ul style="list-style-type: none"> • Secretes digestive enzymes for external digestion; • Anchors the organism/mushroom (firmly) onto the substrate; • Absorbs digested food materials; Any two	(2 marks)
6.	Increases the surface area for (efficient) exchange of respiratory gases (oxygen and carbon (IV) oxide);	(1 mark)
7.	Haemophilia;	(1 mark)
8.	a) 	(1 mark)
	b) The rate of diffusion increases with the increase in temperature; increase in temperature increases the kinetic energy of the (diffusing) molecules, (increasing the rate of diffusion);	(2 marks)

9	a) Plants are not as active as animals, hence lower energy requirement (thus lower respiratory rate compared to animals);	(1 mark)
	b) <ul style="list-style-type: none"> • During germination (to generate the energy required for the process); • During rapid growth/cell division (at the tips of roots/shoots) to synthesize the energy required to sustain the process; • During active uptake of substances (through the roots); Any two	(2 marks)
10.	Water logging submerges the plant root system; cutting off supply of oxygen to the roots/soil surrounding the roots; (aerobic) respiration in the roots is hampered; active uptake of materials is affected (leading to the death of the affected plants); Any three	(3 marks)
11.	K - Ulna; L - Radius;	(1 mark) (1 mark)
12.	a) (Rapid) absorption of water by the (germinating) seed (through the micropile/seed coat);	(1 mark)
	b) During germination, the food stored in the endosperm is broken down/hydrolyzed (leading to a decrease in dry mass of endosperm); to provide nutrients for the growing embryo (whose dry mass increases during the process);	(2 marks)
13.	Presence of: <ul style="list-style-type: none"> • Cones; • Naked seeds/seeds not enclosed in fruits; • Xerophytic characteristics/needle-like leaves/sunken stomata; 	(3 marks)
14.	a) Intermittent/staircase (growth curve);	(1 mark)
	b) Arthropoda;	(1 mark)
15.	a) <ul style="list-style-type: none"> • Missing links due to complete decomposition of some organisms; • Distortion of some parts during sedimentation; • Destruction of fossils by geological activities (earthquakes/faulting/folding/ volcanicity/mass movement of earth surfaces); Any two	(2 marks)
	b) Presence of similar cell organelles (mitochondria, ribosomes, lysosomes); similar biological chemicals (ATP/proteins/DNA); similar blood pigmentation in tissues of some groups of animals (show they have a common phylogenetic origin);	(3 marks)

16.	a) Ovulation;	(1 mark)
	b) <ul style="list-style-type: none"> Follicle stimulating hormone; Oestrogen hormone; Luteinizing hormone; Any two	(2 marks)
	c) <ul style="list-style-type: none"> Pregnancy/implantation; Menopause; Emotional instability (anger, stress, anxiety); (Drastic) change in environment/weather; Sickness; First two	(2 marks)
17.	The afferent arteriole supplying blood has a broader lumen (bringing in more blood) than the efferent arteriole taking out the blood (this generates high pressure);	(2 marks)
18.	a) Insulin (hormone);	(1 mark)
	b) Pancreas;	(1 mark)
	c) <i>Diabetes mellitus</i> ;	(1 mark)
19.	(a) S – Pepsin/Rennin/chymosin;	(1 mark)
	T-Trypsin;	(1 mark)
	(b) (i) Duodenum;	(1 mark)
	(ii) In the duodenum, the medium is alkaline/basic; favouring the optimal working of the enzyme (T) as illustrated;	(2 marks)
20.	To completely contain/kill the (targeted) pathogens; since failure to take full dose accords the pathogens an opportunity to develop resistance to the drug; the pathogen mutates, over time, giving rise to new strains; finally the drug becomes ineffective;	(3 marks)
21.	They lack ovaries; have a small uterus; underdeveloped breasts; less number of chromosomes; (first two)	(2 marks)
22.	a) A circular area seen (on the stage) while focusing/viewing through the eyepiece of a microscope;	(1 mark)
	b) <ul style="list-style-type: none"> Holds revolving nosepiece/objective lens in place; Holds the ocular/ eyepiece (lens) in place; 	(2 marks)
	c) To avoid rusting; avoid interference with visibility of lens; (any one)	(1 mark)

23.	Blood capillaries constrict; during low temperatures to conserve heat; or They dilate during high temperatures; to allow for loss of (excess) heat to be lost from the body;	(2 marks)
24.	a) (i) Hormone K -Juvenile (hormone); (ii) Gland L -Prothoracic (gland);	(1 mark) (1 mark)
	b) (Ecdysone hormone) causes metamorphosis/causes the larval stage (of an insect) to change/metamorphosize into pupa (and pupa) into adult;	(1 mark)
	c) (i) Process M -complete metamorphosis; (ii) After moulting, the tough/hard, impermeable exoskeleton is shed; allowing the (soft, permeable) larvae to take in water/air, leading to rapid growth (which in turn results to increase in size of the organism);	(1 mark) (2 marks)
25.a)	Part Adaptation Cambium (Small) cells with dense cytoplasm to enable rapid mitotic division, giving rise to secondary growth; Parenchyma Thin-walled to ease passage of materials; Large vacuole/irregular in shape to increase storage space (for materials);	(1 mark) (1 mark)
	b). (Sisal is a xerophyte plant) the thick cuticle enables it to conserve/reduce water loss; it is shinny to reflect light, minimizing/preventing evaporation by radiation; (any two)	(2 marks)
26	Because the individual's blood has both antigens, A and B ; which will coagulate/agglutinate with antibodies a and b ; found in individuals with blood groups A , B and O ; OWTTE	(2 marks)
27.	a) (i) Process N - Photosynthesis; (ii) Polysaccharide P - Starch;	(1 mark) (1 mark)
	b) Respiratory enzymes; absence/little oxygen;	(2 marks)
	c) Light; water (moisture); Carbon (IV) oxide; Optimum temperature; (First two)	(2 marks)