

Annual Examinations for Secondary Schools 2022

YEAR 9	BIOLOGY	MARKING SCHEME
---------------	----------------	-----------------------

MARKING SCHEME

Q. No.	Suggested Answer	Mark/s	Comments
1a	Both cells have a nucleus OR Both cells have membrane bound organelles.	2	Accept chloroplasts and/or mitochondria
bi	Plant cell	1	
ii	Has large permanent vacuole or has chloroplasts	1	Reject has vacuole
c	Site where aerobic respiration takes place Harvests energy Converts chemical energy to stored energy Produces ATP	1	Any one Reject produces energy
di	starch	1	
dii	photosynthesis	1	
	Total:	7	
2.a	An organism that does not have a backbone/spine.	1	
bi	A – <i>Lumbricus terrestris</i> D – <i>Ascaris lumbricoides</i>	1 1	Deduct ½ mark for each name not being underlined or genus in capital letter
ii	It allows people from all over the world to communicate on specific organisms	2	
c	Oxygen is absorbed through the outer surface of the organism As it has a large SA:V ratio and is also thin	1 ½ ½	
di	Segmentation; arthropods are segmented	1	
ii	Have jointed limbs or Have an exoskeleton	1	Any one
	Total:	9	

3a	Adequate temperature OR oxygen		1	Any one Reject heat or temperature
bi	Loss of mass is the result of the use/breakdown of the seed cotyledon to initiate growth of roots and shoots		1 1	
ii	Photosynthesis has started Which provides enough energy for tissue generation and growth		1 1	
c	Mass is a constant variable important for reliability of experiment		1 1	
di	Epigeal germination		1	
ii	The testa protects the seed from pathogens and physical harm		1	
	Total:		9	
4a	Hot and windy conditions		1	
b	Humidity/moisture in air OR Light intensity		1	
c	Warm to hot air – as the surrounding air gets hotter, evaporation from stomata increases releasing more water particles into the air. Still to windy: Wind blows away water particles from around the plant. The area is unsaturated with water particles increasing evaporation.		1 1 1 1	
d	Adaptation	Explanation	2 2 2	
	In cacti, leaves are reduced to spines	Reduction of leaf surface area means that less water is lost during the day.		
	Pine trees have sunken stomata	The region around the sunken stomata becomes saturated with water particles		
	Cacti have a very thick waxy cuticle	A thick waxy cuticle decreases loss of water as this layer stops evaporation from leaf.		
	Total:		12	

5a	The population size of the predator is low while that of the prey is high.	1 1	
bi	The population size of both predator and prey is the same.	1	Accept are equal
ii	The predator population continues to decrease as the prey number is limited. The prey population increases as they can reproduce and have many offspring.	1 1	
	Total:	5	
6.ai	B	1	
ii	Sand particles are large and so deposits first.	1	
b	High capacity for holding water. Water drains slowly through it Contains low amounts of air Difficult to till as it becomes hard when dry Warms up slowly in spring	1 1	Accept reference to small size particles.
c	A process that occurs when the impact of water or wind detaches and removes soil particles, causing the soil to deteriorate.	1	
	Total:	5	
7a	Yeast Making bread/pizza dough Making wines/beer/alcohol drinks.	1 2	
bi	The parasite, lives off of another organism, the host, harming it.	2	
ii	Have a single cotyledon in the seed Have fibrous roots Have scattered vascular bundles in stem Parallel veined leaves Flower parts usually in multiples of 3	1	Any one
c	Saprophytic organisms through their actions release nutrients in the soil/surrounding environment.	2	
	Total:	8	
	Section B		
1a	Axes with units labelled Title Correct points Good scale	1 1 2 1	Do not award marks if axes are inverted. Deduct one mark if points are not joined with ruler.
b	The percentage change in mass increase from 0M to 0.8 M and decreases at 1.0 M.	2	
c	Osmosis is the movement of water From a dilute solution to a concentrated solution Across a selectively permeable membrane.	1 1 1	

d	The process of osmosis keeps plants cells fully turgid, Keeping leaves and stem fully supported for photosynthesis.	1 1 1	
e	Plant cells do not burst because the cell is covered by a rigid cell wall. Animal cells do not have a cell wall.	1 1	
	Total:	15	
2.ai	gravity	1	
ii	rapid cell growth on just that one side of the stem.	1	
iii	Conditions inside the organism must be carefully controlled for the organism to function effectively and survive.	2	
bi	positive	1	
ii	Plant A coleoptile has a tip while that of plant B has been removed. Auxins are produced in the shoot's tip and move to the parts needed for growth. As the tip has been removed there is no growth.	1 1 1 1	
c	The opaque cap stops light from falling onto the tip of the coleoptile. As there is no stimulus then there will not be a response.	1 1	
d	In D the tip is separated from the shoot by a permeable barrier while in E the tip is separated by an impermeable barrier. There is a phototropic response in D but not in E. This experiment confirms that the tip produces the auxin in response to light. A plant response occurs when the auxin is allowed to travel (permeable barrier) to the section of the plant.	1 1 1 1	
	Total:	15	
3ai	Asexual reproduction involves one parent where the offspring are genetically identical to the parent. Sexual reproduction involves two parents where the offspring is genetically different from both parents.	1 1	Comparison should be present
ii	Any type of vegetative propagation from tubers, corms, runners etc	1	
bi	Insect - pollinated	Wind - pollinated	Any two comparisons – may be both from carpel.
	Stigma short/stubby/found inside flower	Stigma large/feathery/hanging out of flower	

	Anthers inside flower (short filament)	Anthers hanging out of flower (Long filament)			
ii	Insect - pollinated	Wind - pollinated		1 1	Any two – comparison not mentioned in previous question may be used here
	Have large colourful petals	Have small, green bracts (petals)			
	May have nectar	Do not have nectar			
	Dense, sticky pollen	Light pollen, may have wings			
iii	Pollination is the movement of pollen from the anthers of a flower to the stigma of that same or other flower of the same or different plant of the same species.			1 1	
iv	In cross – pollination there is a higher chance of variation in plants. This is reduced when the same plant produces gametes.			1 1	
c	Fertilisation occurs when the male nucleus meets with the female nucleus.			1 1	
d	Water, wind, animals (including insects), Self-propulsion			1, 1	Any two
	Total:			15	
4a	The skin is multi-layer with the epidermis having a protective role against harmful microbes.			1 1	
b	The dermis has several capillaries through which blood may be shunted to the top area of the dermis to release more body heat or to the lower area of the dermis to retain body heat. Dermis has sweat glands which produce and release sweat when it is hot. Dermis has hair buds, hair follicle and erector muscles that pull the hair follicle to trap air and insulates to reduce heat loss.			2 2	Any two
c	It acts as an insulator to regulate body temperature. protecting your body from harm. storing energy.			1 1	Any one

