



Annual Examinations for Secondary Schools 2022

YEAR 11	BIOLOGY	MARKING SCHEME
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Q. No.	Suggested answer	Mark/s	Additional comments
1	Ferns/pteridophyta	1	
	Angiosperms spermatophyta	1	
	Coelenterata/Cnidaria	1	
	Mollusca	1	
	Vertebrata	1	
		T:5	
2a	Stomata/stoma	1	
b	Xylem tissue	1	
c	Most transpiration occurs from the lower epidermal surface of the leaf.	2	
d i	Different plants may have different number of stomata on their leaves.	1	
d ii	The number of stomata will differ with a change in surface area.	1	
		T:6	
3a	Active transport is the movement of particles against a concentration gradient/from a low solute concentration to a high solute concentration	1	
	Across a selectively permeable/semi-permeable membrane	1	
	With the use of energy.	1	
b	osmosis	1	
c i	The cell wall detaches from the cell membrane.	1	
	The cytoplasm reduces in volume/ becomes more concentrated.	1	
	The permanent vacuole shrinks.	1	
c ii	This will stop any changes in concentration of the cytoplasm of the muscle cells.	2	
		T: 9	
4a	Volume of water	1	
	Burning foodstuff at the same distance from boiling tube.	1	Any two
	Mass of foodstuffs burnt		
b	To make sure of uniformity of the temperature in the volume of water.	2	
c	The energy content of the peanut is higher than the energy content of the broad bean.	2	Accept: More heat energy is released from the peanut than the broad bean.

d	Repeated readings give more reliable results to compensate for sources of error.	1 1	
e i	Heat may be lost to the surroundings rather than to heat the water.	2	
e ii	Using a calorimeter/ funnelling heat onto boiling tube.	1	
		T: 11	
5a	Any food chain with 4 trophic levels.	2	
b	Tuna/shark/spearfish	1	
c i	Have five or more paired jointed limbs.	1	
c ii	The feeding habits are different. Copepods are herbivores/primary consumers while amphipods are carnivores/ secondary consumers	1 1	
d i	Sunlight Concentration of carbon dioxide	1	Any one
d ii	More shrimps means less phytoplankton But more copepods, mackerel and tuna.	1 1	
		T: 9	
6a	This is respiration in the absence of oxygen.	2	
b	Changes in temperature and pH affect the rate of reaction of the enzymes of the microbes. Specific temperature and pH may inactivate/denature enzymes	2 1	
c	It is commonly used in rural areas as cooking gas. It can be used for the production of electricity. It can be used in instruments used for water heating, space (room) heating etc. It can replace compressed natural gas for use in vehicles. It can displace carbon dioxide in on-site CHP plants.	1 1	Any two
		T:7	
7a	Ultrafiltration - A Selective reabsorption of glucose - B	1 1	
b	Urea	1	
c i	Loop of Henle' Collecting duct	1 1	
c ii	The diuretic reduces the amount of ADH released by the pituitary. ADH acts on the collecting duct thus reducing the amount of water reabsorbed. More urine is produced.	1 1 1	
		T: 8	

Q. No.	Suggested answer	Mark/s	Additional comments
Section B			
1a	Transferring mature pollen grains from the male anther of a flower to the female stigma of same or different flower.	1 1	
b i	Male – stamen Female - carpel	1 1	
b ii	These flowers are usually large and not inconspicuous. The petals of these flowers are usually colourful and not brownish. The flowers usually have a pleasant scent and not a bad odour.	2 2	Any two
b iii	These show the insects the path to the chambers.	1	
c	Mimicry as a form of protection against predators. Mimicry to attract/catch prey.	1	Any one
d	The pollen germinates a pollen tube. The pollen tube grows downwards towards the ovary of the flower. The pollen nuclei move downwards and enter the ovule through the micropyle. The pollen nucleus fuses with the flower ovule nucleus.	1 1 1 1 1	
		T: 15	
2a i	incorrect	1	
a ii	The amoeba contains a nucleus and is therefore an eukaryote.	1	
a iii	The first letter of the second word of the binomial name (species name) should be written in small (lower script) letter (h)	1	Accept the full binomial name correctly written.
b i	Controls the functions of the cell.	1	Do not accept a description of the nucleus.
b ii	Controls molecules that enter or exit a cell or Encloses the contents of the cell.	1	
c	Cytoplasm is a viscous fluid rich in solutes That contains organelles and structures.	1 1	Or equivalent
d	In phagocytosis the cell produces pseudopodia That surround the virus (food) The virus enters the cell enclosed in a vesicle.	1 1 1	Accept any reference to correct description. The term virus does not need to be included in the description.
e i	A parasite is an organism living on another organism for food and shelter Harming the host in the process.	1 1	
e ii	Absorbs water from the digestive tract.	1	

e iii	Diarrhoea, watery faeces, mucus faeces, loose stools	1	Any one or equivalent
f	Asexual reproduction	1	
		T: 15	
3ai	Ventricles are thick walled as they send blood at high pressure via the arteries, The left ventricle - to transport oxygen/ solutes to the body. The right ventricle – to transport deoxygenated blood to the lungs.	1 1 1	
ii	Phloem vessels carry sucrose. Sucrose is the product of excess glucose produced by photosynthesis. The phloem vessels transport sucrose from the photosynthesising parts to the non - photosynthesising areas of the plant such as roots and flower.	1 1 1 1	
iii	Leaves are the main photosynthesising organs of the plant. The cells of the leaves, except the lower/upper epidermis and of the vascular bundles, contain the organelles chloroplasts which contain the pigment chlorophyll. By photosynthesis, the leaves provide the plant cells with chemical energy needed for respiration and other reactions of the plant cell.	1 1 1 1 1	
b	A reflex is an automatic nervous reaction that is not consciously controlled. The reflex action is a response to a stimulus, that minimises any damage to the body from potentially harmful conditions.	1 1 1	
		T: 15	
4a	Title/axes Plotting of points Correct scale	2 2 2	Do not award marks if axes are inverted.
b	The number of germinating seeds increases from day 16 to day 32. After day 32 there are no new germinating seeds.	1 1	
c	Oxygen Adequate/correct temperature	1 1	Do not accept a specific temperature reading.
d i	Light provides chemical energy to the plant which replaces the food store of the cotyledons.	1 1	
d ii	Seedlings of pot A grow towards the unilateral light. Seedlings of pot B grow upwards.	1 1	Accept turn toward light Accept grow straight
d iii	Auxin	1	Accept Indole Acetic Acid (IAA)

		T: 15	
5a	3 pairs of jointed limbs	1	Accept other characteristics of insects but not of arthropods.
b i	Animals that do not have a backbone.	1	
b ii	Spiracles open and close to reduce to loss of water from the insect.	2	Do not accept gaseous exchange.
b iii	Spiracles to trachea to tracheoles to cells.	2	
b iv	Large surface area Network of capillaries Thin epithelium/membrane Thin film of fluid/water	1	Any one
c	It absorbs and utilises the energy from the sun.	2	
d i	epidermis	1	
d ii	Thermoregulation with vasodilation and vasoconstriction, sweating and trapping of air for insulation by means of hair Protect the inner layers Supports the epidermis	2 2	Any two Or equivalent
d iii	C, H, O, N	1	All four elements must be given to award mark
		T:15	