

ANSWER KEY

Code No SY 226

SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH 2026

PART - III

SUBJECT: BOTANY

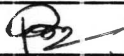



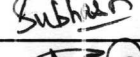
30 SCORES

1 HOUR

Qn. No.	Sub Qn.	Answer Key / Value Points	Score	Total Score	
PART I 1 - 5 (Answer any 3 questions)			3 x 1 = 3		
1		(d) / Self-Incompatibility	1	1	
2		(b) (i) (iv) (ii) (iii) (v) / If all the steps are written in the correct order give mark	1	1	
3		Basmati rice	1	1	
4		(a) / Declining population	1	1	
5		10 Joules / 10 / 0.1%	1	1	
PART II 6 - 16 (Answer any 9 questions)			9 x 2 = 18		
6		* If flower is unisexual (female), emasculation not required / Emasculation is used only for bisexual flowers / In unisexual female (Pistillate) flower anther is absent.	1	2	
		* Bagging is necessary to prevent the contamination of stigma with unwanted pollen grains / Bagging makes sure that only desired pollen grain is used for pollination.	1		
7		* Exine is made up of sporopollenin.	1/2	2	
		* Intine is made up of Cellulose and Pectin / Cellulose / Pectin	1/2		
		* Sporopollenin is one of the most resistant organic material / sporopollenin can resist high temperatures / strong acids / alkali / no enzyme can degrade sporopollenin. (any one point give 1 score)	1		
8		* DNA is a hydrophilic molecule.	1	2	
		* Bacterial cells are made competent by treating them with divalent cation / calcium / Bacterial cells and recombinant DNA are subjected to heat shock (or explanation of heat shock).	1		
9		Column I	Column II	2	
		I / DNA Ligase	D / Joining DNA fragments		1/2
		II / Exonucleases	A / Remove nucleotide from ends of DNA		1/2
		III / Taq Polymerase	B / Extends Primer on a DNA template		1/2
	IV / Restriction Endonuclease	C / Cut DNA at Specific Position	1/2		
10	(a)	C peptide is removed / C peptide is not present in mature insulin.	1	2	
	(b)	Disulphide bridges / disulphide bond / S-S	1		
11		* Bt toxin / cry protein exist as inactive protoxin	1	2	
		* Bt toxin is converted into an active form due to alkaline pH of the gut of the insect or its explanation.	1		

12	(a)	Frog - Camouflaged / Cryptically coloured /Poisonous to avoid the predators.	1	2
	(b)	Monarch butterfly - highly distasteful to its predator (bird) / highly poisonous due to chemical present in its body.	1	
13	(I)	b / Curve b / Logistic growth curve / sigmoid curve / S shaped curve / verhulst- pearl logistic growth curve * Resources are finite / limited	1/2 1/2	2
	(II)	Carrying capacity / its explanation	1	
14	(a)	Barnacles on whale → Commensalism	1/2	2
	(b)	Mycorrhiza → Mutualism / Symbiosis	1/2	
	(c)	Abingdon tortoise and goats → Competition	1/2	
	(d)	Ticks and dogs → Parasitism	1/2	
15		* They do not consider the same species belonging to more than one trophic level * Saprophytes are not included in ecological pyramids * They assume a simple food chain * Simple food chain never exists in nature * It does not accommodate food webs (any two points)	1x2	2
16		Fragmentation Earth worms / detritivores breakdown detritus into smaller particles. Catabolism Bacteria degrade detritus into simpler inorganic substances	1/2 1/2 1/2 1/2	2
PART III 17 - 20 (Answer any 3 questions)			3 x 3 = 9	
17	(a)	Mature embryo / Dicot embryo	1/2	3
	(b)	B - Suspensor	1/2	
		C - Radicle	1/2	
D - Plumule		1/2		
E- Cotyledon		1/2		
(c)	Cotyledon store food / provide nutrients to seedlings	1/2		
18	(a)	* Foam control system * pH control system * Temperature control system * Motor * Cylindrical or curved base * steam used for sterilization * Culture broth * Sampling ports (any 4 points)	1/2 x 4	3
	(b)	* After downstream processing products has to be formulated with suitable preservatives / addition of preservatives * Clinical trials in the case of drugs * Quality control test (any 1 point)	1	

19	(a)	Transgenic animals: animals that have had their DNA manipulated to possess and express an extra gene / animals with foreign gene.	1	3
	(b)	Mice	1/2	
	(c)	* To study the normal Physiology and Development or explanation * Study of Disease or explanation * Biological Products or explanation * Vaccine Safety testing or explanation * Chemical safety testing or explanation (any 3 points)	1/2 x 3	
20	(a)	Primary productivity - Rate of biomass production by producer / Amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis / Productivity at producer level. Primary productivity is expressed in terms of weight / ($\text{gm}^{-2}\text{year}^{-1}$) or energy / ($\text{Kcal m}^{-2}\text{year}^{-1}$)	1 1/2	3
	(b)	$\text{GPP} = \text{NPP} + \text{R}$ / $\text{NPP} = \text{GPP} - \text{R}$	1/2	
	(c)	Secondary productivity	1	
	(If (a) and (c) are correct give full score)			

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