

ANSWER KEY
SECONDARY IMPROVEMENT
PART III
SUBJECT BOTANY

CODE NO FY 26
VERSION 1/5

30 SCORES
1 HOUR

Qn. No.	Sub. Qn.	Answer key /Value Points	Score	Total Score																				
1		Camillo Golgi	1	1																				
2		Zygotene	1	1																				
3		Open Vascular Bundle	1	1																				
4		Antiport/ Facilitated diffusion	1	1																				
5		Thermoacidophiles	1	1																				
6	a b	G1 phase, S phase and G2 phase Inactive stage / Metabolically active but no longer proliferate/ Cell do not further divide/Cell exit cell cycle (Any correct response like this)	1 1	2																				
7	a b	The mode of arrangement of sepals or petals in floral axis or floral bud with respect of the same whorl is known as aestivation Placentation is the arrangement of ovules within the ovary /arrangement of placenta within the ovary.	1 1	2																				
8		<table><tr><td>Column A</td><td>Column B</td></tr><tr><td>(i) Phosphorus</td><td>(d) Phosphorylation</td></tr><tr><td>(ii) Potassium</td><td>(c) Opening and closing of stomata</td></tr><tr><td>(iii) Molybdenum</td><td>(a) Nitrogen metabolism</td></tr><tr><td>(Iv) Zinc</td><td>(b) Synthesis of auxin</td></tr></table> OR <table><tr><td>Column A</td><td>Column B</td></tr><tr><td>(i)</td><td>(d)</td></tr><tr><td>(ii)</td><td>(c)</td></tr><tr><td>(iii)</td><td>(a)</td></tr><tr><td>(Iv)</td><td>(b)</td></tr></table>	Column A	Column B	(i) Phosphorus	(d) Phosphorylation	(ii) Potassium	(c) Opening and closing of stomata	(iii) Molybdenum	(a) Nitrogen metabolism	(Iv) Zinc	(b) Synthesis of auxin	Column A	Column B	(i)	(d)	(ii)	(c)	(iii)	(a)	(Iv)	(b)	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
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9	a b	Leghaemoglobin Leghaemoglobin is an oxygen scavenger/ protection of nitrogenase from oxygen/ Provide anaerobic condition (Any one correct response)	1 1	2																				
10		Metacentric, Sub metacentric, Acrocentric and Telocentric OR Diagrams of four types of chromosomes	$\frac{1}{2} \times 4$	2																				
11	a b	Heterospory/ its description Production of two type of spores /precursor of seed habit/important step in evolution / formation of two types of gametophytes/microspore and megaspore present	1 1	2																				
12		<table><tr><td>Light reaction</td><td>Dark reaction</td></tr><tr><td>Directly light driven process</td><td>Not directly light driven process</td></tr><tr><td>Occurs in grana</td><td>Occurs in stroma</td></tr><tr><td>Photochemical reaction</td><td>Enzymatic reactions/ Biosynthetic reaction</td></tr><tr><td>Synthesis of NADPH and ATP</td><td>Synthesis of glucose/ Dependent on the products of light reactions (ATP and NADPH)</td></tr></table> (Any two relevent response from each reaction)	Light reaction	Dark reaction	Directly light driven process	Not directly light driven process	Occurs in grana	Occurs in stroma	Photochemical reaction	Enzymatic reactions/ Biosynthetic reaction	Synthesis of NADPH and ATP	Synthesis of glucose/ Dependent on the products of light reactions (ATP and NADPH)	1 1	2										
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13		Apoplast : is the system of adjacent cell walls that is continuous throughout the plant, except at the casparian strips of the endodermis in the roots / movement of water through inter cellular spaces and walls of cells /does not involve crossing of cell membrane / depend on gradient /does not provide any barrier /mass flow occur /it is a faster movement /most water movement is through apoplast . Symplast : is the system of interconnected protoplasts./ aided by cytoplasmic streaming/movement through plasmodesmata /through cell cytoplasm/slower movement/ less water movement /down a potential gradient. (Any one relevent response from each pathway give full score)	1 1	2																				

14	a	$RQ = \frac{\text{volume of CO}_2 \text{ evolved}}{\text{volume of O}_2 \text{ consumed}} = \frac{6 \text{ CO}_2}{6 \text{ O}_2} = 1 \quad \text{OR} \quad 1$	1																
	b	The compounds that are oxidised during respiration are known as respiratory substrates/ the substance undergo respiration /the substance undergo oxidation	1	2															
15		<table><tr><td>CHARACTERISTICS</td><td>C3 PLANTS</td><td>C4 PLANTS</td></tr><tr><td>The primary CO₂ acceptor</td><td>(a) RuBP</td><td>PEP</td></tr><tr><td>The primary CO₂ fixation product</td><td>(b) PGA/3PGA</td><td>OAA/Oxalo acetic acid</td></tr><tr><td>Leaf anatomy</td><td>Normal Anatomy</td><td>(c) Kranz anatomy/ its explanation</td></tr><tr><td>Examples</td><td>Hibiscus</td><td>(d) Maize/Sorghum/ Sugar cane / Amaranth (any other correct example)</td></tr></table>	CHARACTERISTICS	C3 PLANTS	C4 PLANTS	The primary CO ₂ acceptor	(a) RuBP	PEP	The primary CO ₂ fixation product	(b) PGA/3PGA	OAA/Oxalo acetic acid	Leaf anatomy	Normal Anatomy	(c) Kranz anatomy/ its explanation	Examples	Hibiscus	(d) Maize/Sorghum/ Sugar cane / Amaranth (any other correct example)	½ x 4	2
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16	a	TCA /Tricarboxylic Acid Cycle/Krebs cycle /citric acid cycle /aerobic respiration	½																
	b	A) Oxaloacetic acid (OAA) B) α-ketoglutaric acid /isocitrate C) Malic acid	½ x 3	2															
17	a	Carboxylation, Reduction and Regeneration.	½ x 3																
	b	RUBISCO /RuBP carboxilase-oxygenase / RuBisCO.	½																
	c	Its active site can bind to both CO ₂ and O ₂ / it has oxygenase and carboxylase activity/ RuBisCO is the most abundant enzyme in the world / dark reaction or C3 cycle begins with this enzyme/ RuBisCO has a much greater affinity for CO ₂ when CO ₂ : O ₂ ratio is nearly equal	1	3															
18	a	Solanaceae	1																
	b	Complete flower /bisexual/actinomorphic / Pentamerous /5 sepals/gamosepalous/5 petals/ gamopetalous/epipetalous stamens/ 5 stamens /bicarpellary /axile placentation/ syncarpous/ swollen placenta	1																
	c	Vegetables-Potato/Tomato/Brinjal, Spices-Chilly, Medicinal plants-Balladona (<i>Atropa</i>) Aswagangha (<i>Withania</i>) <i>Datura</i> , Fumigatory-Tobacco, Ornamental-Petunia, Cestrum (Name of any two economically important plants from Solanaceae)	½ x 2	3															
19	a	Auxin : Root initiation /promote Flowering /prevent fruit fall and leaf drop /promote abscission /cause apical dominance /induce parthenocarp /acts as herbicide / control xylem differentiation/help cell divisions .	1																
	b	Gibberelline : Stem elongation/ delay senesence / speed up malting / increase yield in sugarcane / hasten maturity period and early seed production/ promote bolting .	1																
	c	Cytokinin : Promote cytokinesis (cell division) / produce new leaves and chloroplast /lateral shoot growth/ adventitious shoot formation / overcome apical dominance / promote nutrient mobilisation/ delay senesence . (Any one point in each a, b & c)	1	3															
20		<table><tr><td>STEM</td><td>ROOT</td><td>LEAF</td></tr><tr><td> - Conjoint vascular bundle - Endarch xylem </td><td> - Radial vascular bundle - Exarch xylem </td><td> - Upper and lower epidermis - Ground tissue is mesophyll </td></tr></table>	STEM	ROOT	LEAF	- Conjoint vascular bundle - Endarch xylem	- Radial vascular bundle - Exarch xylem	- Upper and lower epidermis - Ground tissue is mesophyll	½ x 6	3									
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School Code	Dist	PEN	Name	Mob	Subject
01053	1	155050	SULFI M	9496154587	BOTANY
02049	2	155741	JAYAKUMAR S	9447334047	BOTANY
03033	3	157650	RONI M ABRAHAM	9446286620	BOTANY
04053	4	157780	REJI J	9495118104	BOTANY
05075	5	196293	SABU M M	9447308935	BOTANY
06030	6	210394	REGI T THOMAS	9447827910	BOTANY
07168	7	640540	DR SATHEESH P R	9446484741	BOTANY
08078	8	411658	ROBINS P J	9288650161	BOTANY
09045	9	194610	MURALI MOHANAN E	9496351516	BOTANY
10009	10	412030	KUNHIMOIDEEN KUTTY M T	904876382	BOTANY
11162	11	166305	GEETHA N S	9446329268	BOTANY
12022	12	232212	SUBHASH AUGUSTINE	7559022390	BOTANY
13048	13	233926	MUHAMED RAFEEQUE K	9446770963	BOTANY
14049	14	433083	ANISH BABU V B	9446169675	BOTANY