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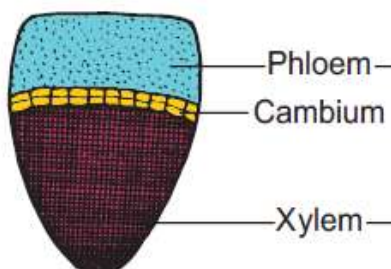
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PUBLIC EXAMINATION MARCH - 2025

XI – BIO-BOTANY – TENTATIVE ANSWER KEY

SECTION - 1			MARKS														
Answer all the questions.			8 x 1=8														
	TYPE - A	TYPE - B															
Q.NO	ANSWER	ANSWER															
1.	c)Pedilanthus	a) Serotaxonomy	1														
2.	b)Cucurbitaceae	a) (1)–(iii),(2)–(i),(3)–(ii),(4)–(iv)	1														
3.	c) B	a) Statement I is Wrong but Statement II is correct	1														
4.	a) 0.7	c) B	1														
5.	a) Serotaxonomy	b)Cucurbitaceae	1														
6.	a) Statement I is Wrong but Statement II is correct	d)Bryophytes	1														
7.	a) (1)–(iii),(2)–(i),(3)–(ii),(4)–(iv)	c)Pedilanthus	1														
8.	d)Bryophytes	a) 0.7	1														
	Section - 2		4x2=8														
	Note : Answer any four question.																
9.	Special type of inflorescence: <ul style="list-style-type: none">• Cyathium• Hypenthodium• Coenanthium		(any two type) 2														
10.	<table><tr><th>Nucleoside</th><th>Nucleotide</th></tr><tr><td>It is a combination of base and sugar.</td><td>It is a combination of nucleoside and phosphoric acid.</td></tr><tr><th>Examples</th><th>Examples</th></tr><tr><td>Adenosine = Adenine + Ribose</td><td>Adenylic acid = Adenosine + Phosphoric acid</td></tr><tr><td>Guanosine = Guanine + Ribose</td><td>Guanylic acid = Guanosine + Phosphoric acid</td></tr><tr><td>Cytidine = Cytosine + Ribose</td><td>Cytidylic acid = Cytidine + Phosphoric acid</td></tr><tr><td>Deoxythymidine = Thymine + Deoxyribose</td><td>Uridylic acid = Uridine + Phosphoric acid</td></tr></table>	Nucleoside	Nucleotide	It is a combination of base and sugar.	It is a combination of nucleoside and phosphoric acid.	Examples	Examples	Adenosine = Adenine + Ribose	Adenylic acid = Adenosine + Phosphoric acid	Guanosine = Guanine + Ribose	Guanylic acid = Guanosine + Phosphoric acid	Cytidine = Cytosine + Ribose	Cytidylic acid = Cytidine + Phosphoric acid	Deoxythymidine = Thymine + Deoxyribose	Uridylic acid = Uridine + Phosphoric acid		Any two 2
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11.	Tyloses: <ul style="list-style-type: none">In many dicot plants, the lumen of the xylem vessels is blocked by many balloon-like ingrowths from the neighbouring parenchymatous cells.These balloon-like structures are called tyloses	2	
12.	Types of transpiration : <ul style="list-style-type: none">Stomatal transpirationLenticular transpirationCuticular transpiration	Any two 2	
13.	Aeroponics: <ul style="list-style-type: none">This technique was developed by Soifer Hillel and David Durger.It is a system where roots are suspended in air and nutrients are sprayed over the roots by a motor driven rotor	2	
14.	Enolation: A water molecule is removed by the enzyme enolase. As a result, enol group is formed within the molecule. This process is called Enolation .	2	
Section - 3 Note : Answer any Three question. Question No: 19 is Compulsory.		3x 3 = 9	
15.	Plectostele: Xylem plates alternates with phloem plates. Example: <i>Lycopodium clavatum</i> .	2 1	
16.	Nepenthes (Pitcher plant): <ul style="list-style-type: none">Pitcher is a modified leaf and contains digestive enzymes.Rim of the pitcher is provided with nectar glands and acts as an attractive lid.When insect is trapped, proteolytic enzymes will digest the insect.	3	
17.	Cytokinesis in Plant Cell	Cytokinesis in Animal Cells	Any Three 3
	Division of the cytoplasm often starts during telophase.	It is a contractile process.	
	Microtubule of the phragmoplast move to the equator, fuse to form a new plasma membrane and the materials which are placed there becomes new cell wall.	The ring consists of a bundle of microfilaments assembled from actin and myosin .	
	Phragmoplast contain microtubules, actin filaments and vesicles from golgi apparatus and ER.	This fibril generates a contractile force, that draws the ring inward forming a cleavage furrow in the cell.	
	In plants, cell plate grows from centre towards lateral walls.	Thus it divides the cell into two.	
18.	Open vascular Bundle : 	Diagram 2 Parts 1	

19.	Programmed cell death (PCD) (Compulsory) <ul style="list-style-type: none"> Senescence is controlled by plants own genetic programme and death of the plant or plant part consequent to senescence is called Programmed Cell Death. In short senescence of an individual cell is called PCD. The proteolytic enzymes involving PCD in plants are phytaspases and in animals are caspases. 			3
	Section – 4 Note : Answer all the Questions.			2x5=10
20.	Difference between Gram Positive and Gram Negative Bacteria:			Any five
	S. No	Characteristics	Gram positive Bacteria	Gram negative Bacteria
	1.	Cell wall	Thick layered with (0.015 µm-0.02µm)	Thin layered with (0.0075µm-0.012µm)
	2.	Rigidity of cell wall	Rigid due to presence of Peptidoglycans	Elastic due to presence of lipoprotein polysaccharide mixture
	3.	Chemical composition	Peptidoglycans-80% Polysaccharide-20% Teichoic acid present	Peptidoglycans -3 to 12% rest is polysaccharides and lipoproteins. Teichoic acid absent
	4.	Outer membrane	Absent	Present
	5.	Periplasmic space	Absent	Present
	6.	Susceptibility to penicillin.	Highly susceptible	Low susceptible
	7.	Nutritional requirements	Relatively complex	Relatively simple
	8.	Flagella	Contain 2 basal body rings	Contain 4 basal body rings
	9.	Lipid and lipoproteins	Low	High
	10.	Lipopolysaccharides	Absent	Present

b)

Economic importance of the family Fabaceae

Economic importance	Binomial	Useful part	Uses
Pulses	<i>Cajanus cajan</i> (Pigeon Pea) <i>Phaseolus vulgaris</i> (French bean) <i>Cicer arietinum</i> (Chick pea / Channa / கொண்டைக்கடலை) <i>Vigna mungo</i> (black gram / உளுந்து) <i>Vigna radiata</i> (green gram / பாசிப்பயறு) <i>Vigna unguiculata</i> (cow pea / தட்டைப்பயறு) <i>Glycine max</i> (soya bean) <i>Macrotyloma uniflorum</i> (Horse gram / கொள்ளு)	Seeds	Sources of protein and starch of our food.
Food plants	<i>Lablab purpureus</i> (field bean) <i>Sesbania grandiflora</i> (agathi) <i>Cyamopsis tetragonoloba</i> (cluster bean)	Tender fruits Leaves Tender fruits	Vegetable Greens Vegetable
Oil Plants	<i>Arachis hypogea</i> (ground nut) <i>Pongamia pinnata</i> (pungam)	Seeds Seeds	Oil extracted from the seeds is edible and used for cooking. Pongam oil has medicinal value and is used in the preparation of soap.
Timber Plants	<i>Dalbergia latifolia</i> (rose wood) <i>Pterocarpus santalinus</i> (red sandalwood) <i>Pimarupium</i> (வேங்கை)	Timber	Timber is used for making furniture, cabinet articles and as building materials.
Medicinal Plants	<i>Crotalaria albidia</i> <i>Psoralea corylifolia</i> (காற்போக அரிசி) <i>Glycyrrhiza glabra</i> (Licorice root / அதிமதுரம்) <i>Mucuna pruriens</i> (பூனைக்காளி)	Roots Seeds Roots Seeds	Used as purgative Used in leprosy and leucoderma Immuno modulator Neurological remedy
Fibre Plants	<i>Crotalaria juncea</i> (sunhemp / சண்பம்ப) <i>Sesbania sesban</i> (aegyptiaca)	Stem fibres (Bast)	Used for making ropes.
Pith Plant	<i>Aeschynomene aspera</i>	Stem pith	Used for packing, handicraft and fishing floats
Dye Plants	<i>Indigofera tinctoria</i> (Avuri) <i>Clitoria ternatea</i> <i>Butea monosperma</i>	Leaves Flowers and seeds Flowers	Indigo dye obtained from leaves is used to colour printing and in paints. Blue dye is obtained Natural dye

5

21

a) Structure of Chloroplast:

- Chloroplasts are vital organelle found in green plants.
- Chloroplast has a double membrane the outer membrane and the inner membrane separated by a space called **periplastidial space**.
- The space enclosed by the inner membrane of chloroplast is filled with gelatinous matrix, lipo-proteinaceous fluid called **stroma**.
- Inside the stroma there are flat interconnected sacs called **thylakoid**.
- The membrane of thylakoid enclose a space called **thylakoid lumen**.
- Grana** (singular: Granum) are formed when many of these thylakoids

Explanation
3

are stacked together like pile of coins.

- Light is absorbed and converted into chemical energy in the granum, which is used in stroma to prepare carbohydrates.
- Thylakoid contain chlorophyll pigments.
- The chloroplast contains osmophilic granules, 70s ribosomes, DNA (circular and non histone)
- and RNA. These chloroplast genome encodes approximately 30 proteins involved in photosynthesis including the components of photosystem I & II, cytochrome bf complex and ATP synthase.
- One of the subunits of RuBisco is encoded by chloroplast DNA.
- It is the major protein component of chloroplast stroma, single most abundant protein on earth.
- The thylakoid contain small, rounded photosynthetic units called **quantosomes**.
- Chloroplast is a semi-autonomous organelle and divides by fission.

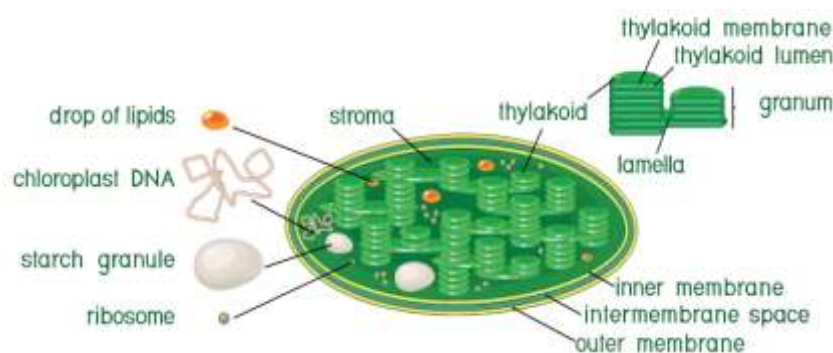
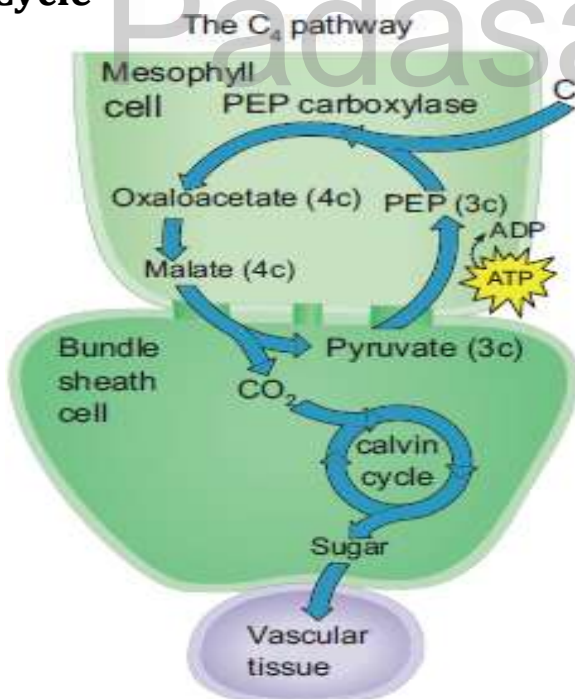


Diagram
2

b) C₄ Cycle



(OR)

Flow
Chart

5

Hatch & Slack Pathway or C₄ Cycle or Dicarboxylic Acid Pathway or Dicarboxylation Pathway

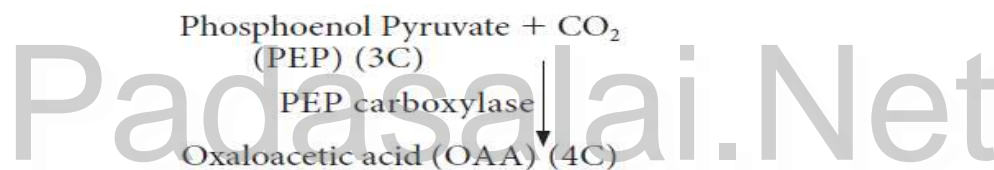
Explanation

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1

1

Stage: I Mesophyll Cells



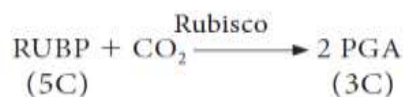
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Oxaloacetic acid (OAA) is converted into malic acid or aspartic acid and is transported to the bundle sheath cells through plasmodesmata.

13.12.2 Stage: II Bundle Sheath Cells

Malic acid undergoes decarboxylation and produces a 3 carbon compound Pyruvic acid and CO₂. The released CO₂ combines with RUBP and follows the calvin cycle and finally sugar is released to the phloem. Pyruvic acid is transported to the mesophyll cells.

Rubisco



1

Mark analysis					
	1m	2m	3m	5m	Total
Ln 1	-	-	-	1	5
Ln 2	1	-	1	-	4
Ln 3	-	-	-	-	-
Ln 4	1	1	-	-	3
Ln 5	1	-	-	1	6
Ln 6	-	-	-	1	5
Ln 7	-	-	1	-	3
Ln 8	1	1	-	-	3
Ln 9	1	-	1	-	4
Ln 10	1	1	-	-	3
Ln 11	-	1	-	-	2
Ln 12	-	1	1	-	5
Ln 13	-	-	-	-	-
Ln 14	1	1	-	1	8
Ln 15	1	-	1	-	4
	8	12	15	20	55

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PREPARED BY
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(English Medium & Tamil Medium)

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ZOOLOGY - 180/180
CHEMISTRY - 162/180
PHYSICS - 147/180



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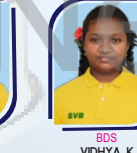
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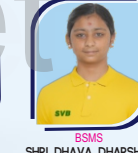
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