

**DIRECTORATE OF GOVERNMENT EXAMINATIONS CHENNAI - 6**  
**HSE FIRST YEAR (+1) EXAMINATION - MARCH -2025**  
**BIO- BOTANY - KEY ANSWER**

**TOTAL MARKS : 35**

**Note:**

1. Answers written only in Black or blue should be evaluated
2. Choose the Correct answer and write the option code

**SECTION -1**

**Answer all the questions:**

**8x1=8**

Type A			Type B		
1	c	Pedilanthus	1	a	Serotaxonomy
2	b	Cucurbitaceae	2	a	1-(iii), 2-(i), 3- (ii), 4- (iv)
3	c	B	3	a	Statement I is wrong but statement II is correct
4	a	0.7	4	c	B
5	a	Serotaxonomy	5	b	Cucurbitaceae
6	a	Statement I is wrong but statement II is correct	6	d	Bryophytes
7	a	1-(iii), 2-(i), 3- (ii), 4- (iv)	7	c	Pedilanthus
8	d	Bryophytes	8	a	0.7

**SECTION - 2**

**Answer any Four questions.**

**4x2 = 8**

9	1. Cyathium 2. Hypanthodium 3. Coenanthium <div style="text-align: right;">(Any 2)</div>		2
10	Nucleoside	Nucleotide	2
	It is a combination of base and sugar	It is a combination of nucleoside and phosphoric acid	
11	Tyloses: ❖ In many dicot plants, the lumen of the xylem vessels is blocked by many balloon like ingrowth from the neighbouring, parenchymatous cells. These balloon like structures are called tyloses.		2
12	1. Stomatal transpiration 2. Lenticular transpiration 3. Cuticular transpiration		2
13	❖ It is a system where roots are suspended in air. ❖ Nutrients are sprayed over the roots by a motor drive rotor.		2

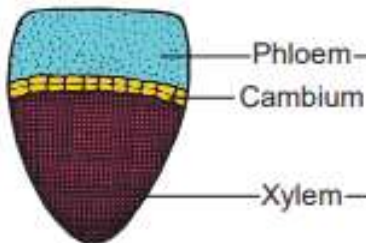
14	<ul style="list-style-type: none"> <li>❖ During Glycolysis, 2 Phospho glycerate dehydrated into phospho enol pyruvate.</li> <li>❖ A water molecule is removed by the enzyme enolase.</li> <li>❖ Enol group is formed within the molecule, this process is called Enolation.</li> </ul> <p style="text-align: center;">(OR)</p> <p style="text-align: center;">2 – Phospho Glycerate</p> <p style="text-align: center;"> <math>2H_2O \xrightarrow{\text{Enolase}}</math> Phospho enol pyruvate </p>	2
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### SECTION -3

**Answer any three questions.**

**Question Number 19 is compulsory**

**3 x 3 = 9**

15	<b>Plectostele</b> <ul style="list-style-type: none"><li>❖ Xylem plates alternates with phloem plates</li><li>❖ Eg. Lycopodium clavatum</li></ul>	2 1
16	<b>Pitcher Plant</b> <ul style="list-style-type: none"><li>❖ The leaf becomes modified into a pitcher in Nepenthes and Sarracenia.</li><li>❖ In Nepenthes the basal part of the leaf is laminar and the midrib continues as a coiled tendrillar structure.</li><li>❖ The apical part of the leaf is modified into a pitcher.</li><li>❖ The mouth of the pitcher is closed by a lid which is the modification of leaf apex.</li></ul> <p style="text-align: right;">(Any 3 Points)</p>	3
17	<b>Cytokinesis in Animal Cells</b>	<b>Cytokinesis in Plant Cell</b>
	1.It is a contractile process 2.The ring consists of a bundle of microfilaments assembled from <b>actin</b> and <b>myosin</b> . 3.This fibril generates a contractile force, that draws the ring inward forming a cleavage furrow in the cell	1.Division of the cytoplasm often starts during telophase 2.Phragmoplast contains microtubules, actin filaments and vesicles from Golgi apparatus and endoplasmic reticulum 3.Cell plate grows from centre towards lateral walls.
18	Open vascular bundle 	<b>Diagram</b> 2  <b>Parts</b> 1
19	<b>Programmed Cell Death (PCD)</b> Senescence is controlled by plants own genetic programme and death of the plant or plant part consequent to senescence is called programmed cell death	3

## SECTION -4

Answer all the questions

2 x 5 = 10

20 a	Difference between Gram Positive and Gram negative bacteria?	5																																												
<div>Difference between Gram Positive and Gram Negative Bacteria</div> <table><tr><th>S. No.</th><th>Characteristics</th><th>Gram positive Bacteria</th><th>Gram negative Bacteria</th></tr><tr><td>1.</td><td>Cell wall</td><td>Thick layered with (0.015 μm-0.02μm)</td><td>Thin layered with (0.0075μm–0.012μm)</td></tr><tr><td>2.</td><td>Rigidity of cell wall</td><td>Rigid due to presence of Peptidoglycans</td><td>Elastic due to presence of lipoprotein-polysaccharide mixture</td></tr><tr><td>3.</td><td>Chemical composition</td><td>Peptidoglycans-80% Polysaccharide-20% Teichoic acid present</td><td>Peptidoglycans-3 to 12% rest is polysaccharides and lipoproteins. Teichoic acid absent</td></tr><tr><td>4.</td><td>Outer membrane</td><td>Absent</td><td>Present</td></tr><tr><td>5.</td><td>Periplasmic space</td><td>Absent</td><td>Present</td></tr><tr><td>6.</td><td>Susceptibility to penicillin</td><td>Highly susceptible</td><td>Low susceptible</td></tr><tr><td>7.</td><td>Nutritional requirements</td><td>Relatively complex</td><td>Relatively simple</td></tr><tr><td>8.</td><td>Flagella</td><td>Contain 2 basal body rings</td><td>Contain 4 basal body rings</td></tr><tr><td>9.</td><td>Lipid and lipoproteins</td><td>Low</td><td>High</td></tr><tr><td>10.</td><td>Lipopolysaccharides</td><td>Absent</td><td>Present</td></tr></table>			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
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20 b	Fabaceae Family Binomial name of any 5 plants and their Economic Importance.	5																																												
21 a	Structure of Chloroplast  Explanation - 2 marks Diagram - 2 marks Parts - 1 mark	5																																												
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21 b)	C <sub>4</sub> Cycle Explanation (or) Flow Chart	5																																												