



**SHRI VIDHYABHARATHI MAT.HR.SEC.SCHOOL**  
**SAKKARAMPALAYAM, ELACHIPALAYAM, AGARAM(PO),**  
**TIRUCHENGODE(TK), NAMAKKAL(DT) – 637 202.**  
**CELL NO: 99655-31727**

**PUBLIC EXAMINATION–MARCH - 2023**  
**XI – BIO-BOTANY – TENTATIVE ANSWER KEY**


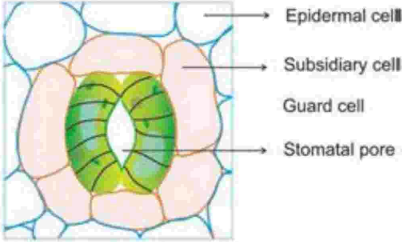
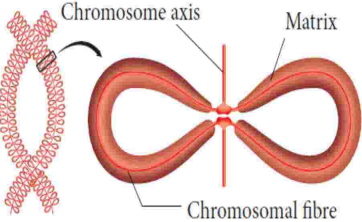
**MARK : 35**

**I. Answer all the questions.**

**Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.**

SECTION - I			8 x 1=8
A TYPES		BTYPES	
1.	c) Movement of chromosomes towards pole	a) Serotaxonomy	1
2.	a) Bacteria- crown gall	d) Phellogen	1
3.	b) Influx of K+	d) Potato, Tomato, Cotton	1
4.	b) 400 to 700nm	b) Influx of K+	1
5.	a) Serotaxonomy	c) Movement of chromosomes towards pole	1
6.	d) Potato, Tomato, Cotton	a) Bacteria- crown gall	1
7.	d) Phellogen	d) Foliarbud, cauline bud	1
8.	d) Foliarbud, cauline bud	b) 400 to 700nm	1
SECTION - II			4X2=8
<b>Answer any four questions.</b>			
9.	<b>Plectostele:</b> ➤ Xylem plates alternates with phloem plates. Example: <i>Lycopodium clavatum</i> .		1 1
10.	<b>Aggregate fruit with multiple fruit.</b>		2
	<b>Aggregate Fruit</b>	<b>Multiple Fruit</b>	
	Aggregate fruits develop from a single flower having an apocarpous pistil.	A Multiple or composite fruit develops from the whole inflorescence along with its peduncle	
	Each of the free carpel is develops into a simple fruitlet.	Flowers fused together by succulent perianth	
	A collection of simple fruitlets makes an <b>aggregate fruit</b> .	Whole inflorescence forms a compact structure is called Multiple fruit.	
	Example: <i>Magnolia</i> , Raspberry, <i>Annona</i> , <i>Polyalthia</i>	Example: Pineapple, Jack fruit, Mulberry	

11.	<b>Transmission electron microscope:</b> <ul style="list-style-type: none"> <li>➤ This is the most commonly used electron microscope which provides two dimensional image.</li> <li>➤ A beam of electron passes through the specimen to form an image on fluorescent screen.</li> <li>➤ The magnification is 1–3 lakhs times and resolving power is 2–10 Å.</li> <li>➤ It is used for studying detailed structure of viruses, mycoplasma, cellular organelles, etc.</li> </ul>		2														
12.	<table border="1"> <thead> <tr> <th>Enzyme</th> <th>Source</th> <th>uses</th> </tr> </thead> <tbody> <tr> <td>Bacterial protease</td> <td>Bacillus</td> <td>Biological detergents</td> </tr> <tr> <td>Bacterial glucose isomerase</td> <td>Bacillus</td> <td>Fructose syrup manufacture</td> </tr> <tr> <td>Fungal lactase</td> <td>Kluyveromyces</td> <td>Breaking down of lactose to glucose and galactose</td> </tr> <tr> <td>Amylases</td> <td>Aspergillus</td> <td>Removal of starch in woven cloth production</td> </tr> </tbody> </table>	Enzyme	Source	uses	Bacterial protease	Bacillus	Biological detergents	Bacterial glucose isomerase	Bacillus	Fructose syrup manufacture	Fungal lactase	Kluyveromyces	Breaking down of lactose to glucose and galactose	Amylases	Aspergillus	Removal of starch in woven cloth production	(any 2) 2
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14.	<b>The atmosphere in huge amount but higher plants fail to utilize it. Why?</b> <ul style="list-style-type: none"> <li>❖ Plant absorb minerals from the soil along with water with the help of Roots Minerals are absorbed as salts</li> <li>❖ Nitrogen is present in large quantities in the atmosphere in gaseous form.</li> <li>❖ The gaseous nitrogen must be fixed in the form of Nitrate salts in the soil to facilitate absorption by plant.</li> <li>❖ Nitrogen fixation can occur only by Non Biological means ( Industrial processes or by lightning) and Biological means ( Bacteria / Cyanobacteria Fungi)</li> <li>❖ Therefore higher plants cannot utilize the atmospheric Nitrogen.</li> </ul>	2															
<b>SECTION -III</b>			<b>3X3=9</b>														
<b>Question no. 19 compulsory</b>																	
15.	<b>Merits</b> <ul style="list-style-type: none"> <li>➤ The classification is based on the complexity of cell structure and organization of thallus.</li> <li>➤ It is based on the mode of nutrition</li> <li>➤ Separation of fungi from plants</li> <li>➤ It shows the phylogeny of the organisms</li> </ul> <b>Demerits</b> <ul style="list-style-type: none"> <li>➤ The Kingdom Monera and protista accommodate both autotrophic and heterotrophic organisms, cell wall lacking and cell wall bearing organisms thus making these two groups more heterogeneous.</li> <li>➤ Viruses were not included in the system.</li> </ul>	1½  1½															

16.	<p><b>Pitcher</b></p> <p>➤ The leaf becomes modified into a pitcher in <i>Nepenthes</i> and <i>Sarracenia</i>. In <i>Nepenthes</i> the basal part of the leaf is laminar and the midrib continues as a coiled tendrillar structure. The apical part of the leaf is modified into a pitcher the mouth of the pitcher is closed by a lid which is the modification of leaf apex.</p>		3
17.	 <p>Epidermal cell</p> <p>Subsidiary cell</p> <p>Guard cell</p> <p>Stomatal pore</p>		2+1
18.	<p><b>Programmed cell death (PCD)</b></p> <p>Senescence is controlled by plants own genetic programme and death of the plant or plant part consequent to senescence is called <b>Programmed Cell Death</b>. In short senescence of an individual cell is called <b>PCD</b>. The proteolytic enzymes involving PCD in plants are <b>phytaspases</b> and in animals are <b>caspases</b>.</p>		3
19.	<p><b>Lampbrush chromosomes</b> occur at the diplotene stage of first meiotic prophase in oocytes of an animal <b>Salamandar</b> and in giant nucleus of the unicellular alga <i>Acetabularia</i>. It was first observed by <b>Flemming</b> in 1882. The highly condensed chromosome forms the chromosomal axis, from which lateral loops of DNA extend as a result of intense RNA synthesis.</p>	 <p>Chromosome axis</p> <p>Matrix</p> <p>Chromosomal fibre</p>	2+1



yield alcohol. Bakeries utilize yeast for the production of Bakery products like Bread, buns, rolls etc., *Penicillium roquefortii* and *Penicillium camemberti* were employed in cheese production.

#### Production of enzymes

- *Aspergillus oryzae*, *Aspergillus niger* were employed in the production of enzymes like amylase, protease, lactase etc. **Rennet** which helps in the coagulation of milk in cheese manufacturing is derived from *Mucor* spp.

#### Agriculture

- Mycorrhiza forming fungi like *Rhizoctonia*, *Phallus*, *Scleroderma* helps in absorption of water and minerals.
- Fungi like *Beauveria bassiana*, *Metarhizium anisopliae* are used as Biopesticides to eradicate the pests of crops. Gibberellin, produced by a fungus *Gibberella fujikuroi* induce the plant growth and is used as growth promoter.

#### Harmful activities

- Fungi like *Amanita phalloides*, *Amanita verna*, *Boletus satanus* are highly poisonous due to the production of Toxins. These fungi are commonly referred as "**Toad stools**".

21.

#### Anatomical differences between dicot root and monocot root

S.N	Characters	Dicot root	Monocot root
1.	Pericycle	Gives rise to lateral roots, phellogen and a part of vascular cambium.	Gives rise to lateral roots only.
2.	Vascular tissue	Usually limited number of xylem and phloem strips.	Usually more number of xylem and phloem strips,
3.	Conjunctive tissue	Parenchymatous; Its cells are differentiated into vascular cambium.	Mostly sclerenchymatous but sometimes parenchymatous. It is never differentiated in to vascular cambium.
4.	Cambium	It appears as a secondary meristem at the time of secondary growth.	It is altogether absent.
5.	xylem	Usually tetrach	Usually polyarch

5

(OR)

#### Ganongs potometer

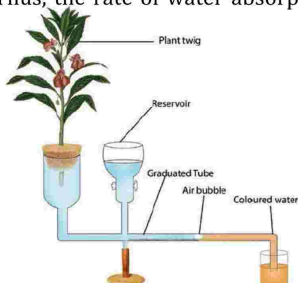
- Ganongs potometer is used to measure the rate of transpiration indirectly. In this, the amount of water absorbed is measured and assumed that this amount is equal to the amount of water transpired.
- Apparatus consists of a horizontal graduated tube which is bent in opposite directions at the ends. One bent end is wide and the other is narrow. A reservoir is fixed to the horizontal tube near the wider end. The reservoir has a stopcock to regulate water flow.
- The apparatus is filled with water from reservoir. A twig or a small plant is fixed to the wider arm through a split cock. The other bent end

3



water.

- An air bubble is introduced into the graduated tube at the narrow end (Figure 11.19). keep this apparatus in bright sunlight and observe. As transpiration takes place, the air bubble will move towards the twig. The loss is compensated by water absorption through the xylem portion of the twig. Thus, the rate of water absorption is equal to the rate of transpiration.



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## MARK ANALYSIS

(WITHOUT CHOICE)

PART	Questions	Total Questions	Book Back Questions	Interior Questions
I	1 Mark	8	5	2+1(NEET)
II	2 Marks	6	4	2
6	3 Marks	5	2	3
IV	5 Marks	4	2	2
Total Marks		<b>55</b>	<b>29</b>	<b>26</b>
Percentage		100 %	53%	47 %

### DEPARTMENT OF BOTANY

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SCHOLARSHIP ENTRANCE EXAM நடைபெறும்

Time : 10.00am Onwards

Venue : SVB SCHOOL CAMPUS.