



**ISLAMIAH MAT HR SEC SCHOOL,
KILAKARAI, RAMANATHAPURAM DT.**

XI COMMON PUBLIC EXAMINATION, MARCH -2023 (24-03-2023)

TENTATIVE ANSWER KEY
Question type A

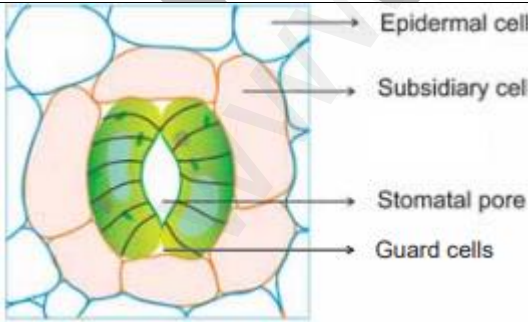
SUB: BIO-BOTANY

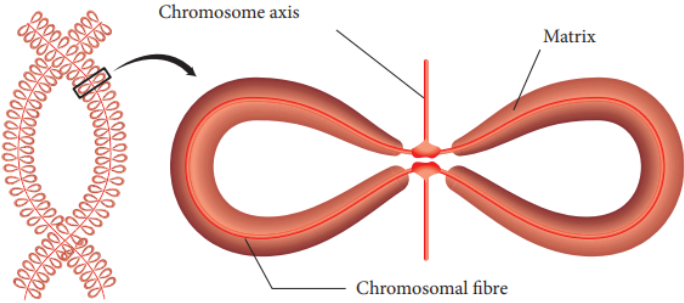
MARKS: 35

Q.NO	CONTENT	MARKS	MODE OF QUESTION
	PART -I		
I.	CHOOSE THE CORRECT ANSWER	8 X 1 = 8	BOOK BACK / BOOK INSIDE/ CREATIVE
1	c. Movement of chromosome towards pole	1	BOOK INSIDE
2	a. Bacteria	1	BOOK BACK
3	b. Influx of K⁺	1	BOOK BACK
4	a. 400 to 700 nm	1	BOOK INSIDE
5	a. Serotaxonomy	1	BOOK BACK
6	d. Potato, tomato, cotton	1	BOOK INSIDE
7	d. Phellogen	1	BOOK BACK
8	d. Foliar bud, cauline bud	1	BOOK BACK


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II.	PART -II ANSWER ANY FOUR OF THE FOLLOWING	4 X 2 = 8	BOOK BACK / BOOK INSIDE/ CREATIVE															
9	Xylem plates alternates with phloem plates. Example: Lycopodium clavatum.	2	BOOK BACK															
10	<table border="1"> <thead> <tr> <th>s.no</th> <th>Aggregate fruit</th> <th>Multiple fruits</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>It is formed from a single flower with apocarpous pistil. Each free carpel develops into a fruitlet.</td> <td>It is formed from the whole inflorescence,</td> </tr> <tr> <td>2</td> <td>It is a group or etaerio of fruitlets.</td> <td>Many fruitlets form a composite fruit</td> </tr> <tr> <td>3</td> <td>It can be compact (Annona) or loose (polyalthia).</td> <td>It is Compact.</td> </tr> <tr> <td>4</td> <td>Eg: Annona, Polyalthia.</td> <td>Eg: Pineapple, Jack fruit.</td> </tr> </tbody> </table>	s.no	Aggregate fruit	Multiple fruits	1	It is formed from a single flower with apocarpous pistil. Each free carpel develops into a fruitlet.	It is formed from the whole inflorescence,	2	It is a group or etaerio of fruitlets.	Many fruitlets form a composite fruit	3	It can be compact (Annona) or loose (polyalthia).	It is Compact.	4	Eg: Annona, Polyalthia.	Eg: Pineapple, Jack fruit.	2	BOOK BACK
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11	This is the most commonly used electron microscope which provides two dimensional image. A beam of electron passes through the specimen to form an image on fluorescent screen. The magnification is 1–3 lakhs times and resolving power is 2–10 Å. It is used for studying detailed structrue of viruses, mycoplasma, cellular organelles.	2	BOOK BACK															

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14	<p>1.Plants absorb minerals from the soil along with water with the help of Roots. Minerals are absorbed as salts.</p> <p>2. Nitrogen is present in large quantities in the atmosphere in a gaseous form. The gaseous nitrogen must be fixed in the form of Nitrate salts in the soil to facilitate absorption by plants.</p> <p>3. Nitrogen fixation can occur only by a) Non - Biological means (Industrial processes or by lightning) b) Biological means (Bacteria / Cyanobacteria Fungi) Therefore higher plants cannot utilize the atmospheric Nitrogen.</p>	2	BOOK BACK															

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III.	PART -III ANSWER ANY THREE OF THE FOLLOWING 19 COMPULSORY	3 X 3 = 9	BOOK BACK / BOOK INSIDE/ CREATIVE
15	<p><u>Merits</u></p> <ul style="list-style-type: none"> • The classification is based on the complexity of cell structure and organization of thallus. • It is based on the mode of nutrition • Separation of fungi from plants • It shows the phylogeny of the organisms <p><u>Demerits</u></p> <ul style="list-style-type: none"> • 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. • Viruses were not included in the system 	3	BOOK BACK
16	<p>Plants which are growing in nitrogen deficient areas develop insectivorous habit to resolve nitrogen deficiency</p> <p><u>Nepenthes (Pitcher plant):</u> 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.</p>	3	BOOK INSIDE
17	 <p>The diagram illustrates a cross-section of a leaf showing a stomatal pore. It labels the following parts: Epidermal cell (the large cell surrounding the pore), Subsidiary cell (the cell adjacent to the guard cells), Stomatal pore (the opening between the guard cells), and Guard cells (the two cells that form the pore).</p>	3	BOOK INSIDE
18	<p>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.</p>	3	BOOK BACK

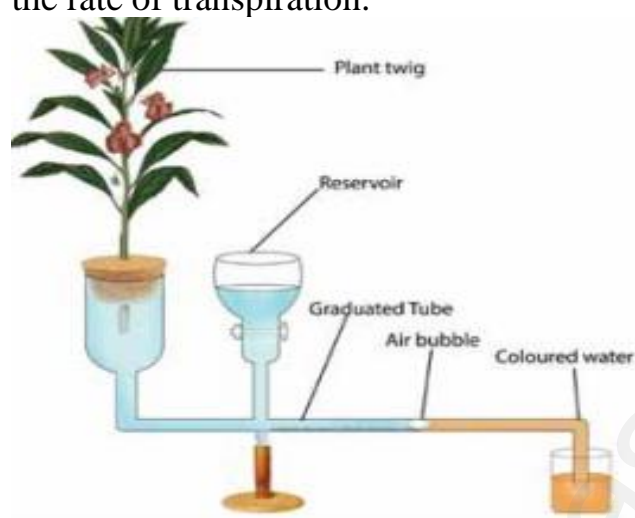
19	 <p>1.It occurs at the diplotene stage of first meiotic prophase in oocytes of an animal Salamandar and in giant nucleus of the unicellular alga Acetabularia 2.It was first observed by Flemming in 1882. The highly condensed Chromosome forms the chromosomal axis, from which lateral loops of DNA extend as a result of intense RNA synthesis.</p>	3	BOOK INSIDE
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IV.	<p style="text-align: center;">PART -IV</p> <p style="text-align: center;">ANSWER ALL THE QUESTION</p>	2 X 5 = 10	BOOK BACK / BOOK INSIDE/ CREATIVE
20 (a)	<p>Inflorescence: Solitary and axillary Flower: Bracteate, bracteolate, bracteoles usually large, pedicellate, heterochlamydeous, complete, bisexual, pentamerous, zygomorphic and hypogynous. Calyx: Sepals 5, synsepalous, green showing valvate aestivation. Odd sepal is anterior in position Corolla: Petals 5, white or blue apopetalous, irregular papilionaceous corolla showing descendingly imbricate aestivation. Androecium: Stamens 10, diadelphous (9)+1 nine stamens fused to form a bundle and the tenth stamen is free. Anthers are dithecous, basifixed, introse and dechiscing by longitudinal slits. Gynoecium: Monocarpellary, unilocular, with many ovules on marginal placentation, ovary superior, style simple and incurved with feathery stigma. Fruit: Legume Seed: Non-endospermous, reniform.</p>	5	BOOK BACK

	<p>Floral Formula: $Br., Brl., \%, \overset{\oplus}{G}, K_{(5)}, C_5, A_{(9)+1}, \underline{G}_1$</p> 		
20 (b)	<p>Mushrooms like <i>Lentinus edodes</i>, <i>Agaricus bisporus</i>, <i>Volvariella volvacea</i> are consumed for their high nutritive value. Yeasts provide vitamin B and <i>Eremothecium ashbyii</i> is a rich source of Vitamin B12.</p> <p><u>Medicine</u> Fungi produce antibiotics which arrest the growth or destroy the bacteria. Some of the antibiotics produced by fungi include Penicillin (<i>Penicillium notatum</i>) Cephalosporins (<i>Acremonium chrysogenum</i>) Griseofulvin (<i>Penicillium griseofulvum</i>). Ergot alkaloids (<i>Ergotamine</i>) produced by <i>Claviceps purpurea</i> is used as vasoconstrictors.</p> <p><u>Industries</u> <u>Production of Organic acid:</u> For the commercial production of organic acids fungi are employed in the Industries. Some of the organic acids and fungi which help in the production of organic acids are: Citric acid and Gluconic acid – <i>Aspergillus niger</i>, Itaconic acid – <i>Aspergillus terreus</i>, Kojic acid – <i>Aspergillus oryzae</i></p> <p><u>Bakery and Brewery</u> Yeast (<i>Saccharomyces cerevisiae</i>) is used for fermentation of sugars to yield alcohol. Bakeries utilize yeast for the production of Bakery products like Bread, buns, rolls etc., <i>Penicillium roquefortii</i></p>	5	BOOK INSIDE

	<p>and Penicillium camemberti were employed in cheese production.</p> <p><u>Production of enzymes</u> 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.</p> <p><u>Agriculture</u> 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</p>																										
21 (a)	<table border="1"> <thead> <tr> <th>S.No.</th> <th>Characters</th> <th>Dicot root</th> <th>Monocot root</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Pericycle</td> <td>Gives rise to lateral roots, phellogen and a part of vascular cambium.</td> <td>Gives rise to lateral roots only.</td> </tr> <tr> <td>2.</td> <td>Vascular tissue</td> <td>Usually limited number of xylem and phloem strips.</td> <td>Usually more number of xylem and phloem strips,</td> </tr> <tr> <td>3.</td> <td>Conjunctive tissue</td> <td>Parenchymatous; Its cells are differentiated into vascular cambium.</td> <td>Mostly sclerenchymatous but sometimes parenchymatous. It is never differentiated in to vascular cambium.</td> </tr> <tr> <td>4.</td> <td>Cambium</td> <td>It appears as a secondary meristem at the time of secondary growth.</td> <td>It is altogether absent.</td> </tr> <tr> <td>5.</td> <td>xylem</td> <td>Usually tetrach</td> <td>Usually polyarch</td> </tr> </tbody> </table>	S.No.	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	BOOK BACK
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21 (b)	<p>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 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</p>	5	BOOK INSIDE																								

through a split cock. The other bent end of the horizontal tube is dipped into a beaker containing coloured 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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