



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

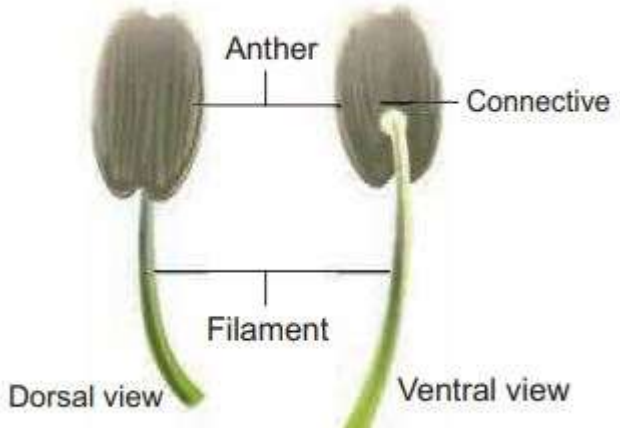
XI COMMON PUBLIC EXAMINATION, MARCH -2022 (16-05-2022)

TENTATIVE ANSWER KEY
Question type B

SUB: BOTANY

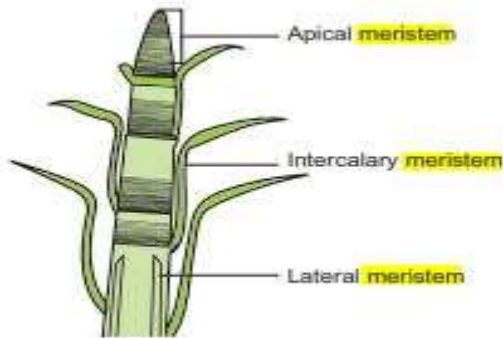
MARKS: 70

Q.NO	CONTENT	MARKS	MODE OF QUESTION
PART -I			
I.	CHOOSE THE CORRECT ANSWER	15 X 1 =15	BOOK BACK / BOOK INSIDE/ CREATIVE
1	a. Acetyl CoA	1	BOOK BACK
2	c. rRNA	1	BOOK INSIDE
3	b. Bacteriophage	1	BOOK INSIDE
4	b. Trichomes helps in dispersal of fruits and seed	1	BOOK INSIDE
5	d. Pollinium	1	BOOK INSIDE
6	a. Abscissic acid	1	BOOK INSIDE
7	a. Calcium	1	BOOK BACK
8	a. Secondary Xylem	1	BOOK INSIDE
9	a. Allium cepa	1	BOOK INSIDE
10	d. Virus	1	BOOK INSIDE
11	d. NAA	1	BOOK INSIDE
12	a. G1 - S - G2 - M	1	BOOK BACK
13	a. Psoralea corylifolia	1	BOOK INSIDE
14	b. Fruit ripening - Carotenoids	1	BOOK INSIDE
15	b. Floridean starch	1	BOOK INSIDE

Q.NO	CONTENT	MARKS	MODE OF QUESTION
II.	PART -II ANSWER ANY SIX OF THE FOLLOWING QUESTION NUMBER 24 IS COMPULSORY	6 X 2 = 12	BOOK BACK / BOOK INSIDE/ CREATIVE
16	Lichens secrete organic acids like Oxalic acids which corrodes the rock surface and helps in weathering of rocks, thus acting as pioneers in Xerosere. Usnic acid produced from lichens show antibiotic properties. Lichens are sensitive to air pollutants especially to sulphur-di-oxide. Therefore, they are considered as pollution indicators. The dye present in litmus paper used as acid base indicator in the laboratories is obtained from Roccella montagnei. Cladonia rangiferina (Reindeer moss) is used as food for animals living in Tundra regions. (ANY TWO POINT)	2	BOOK INSIDE
17	They lack vascular tissue and hence called 'Non-vascular cryptogams'.	2	BOOK INSIDE
18	The mode of arrangement of leaves on the stem is known as phyllotaxy (Gk. Phyllon = leaf ; taxis = arrangement)	2	BOOK INSIDE
19		2	BOOK INSIDE
20	Br., Ebrl., ⊕, ♀, K ₍₅₎ , C ₍₅₎ , A ₅ , G ₍₂₎	2	BOOK INSIDE
21	Plasmodesmata act as a channel between the protoplasm of adjacent cells through which many substances pass through.	2	BOOK INSIDE
22	Definition: A series of events leading to the formation of new cell is known as cell cycle	2	BOOK INSIDE

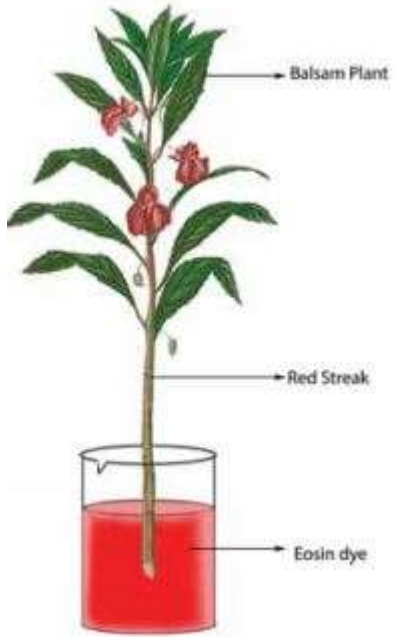
23	Nitrates in the soil are converted back into atmospheric nitrogen by a process called denitrification.	2	BOOK INSIDE														
24	<table border="1"> <thead> <tr> <th>Nucleoside</th> <th>Nucleotide</th> </tr> </thead> <tbody> <tr> <td>It is a combination of base and sugar.</td> <td>It is a combination 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> </tbody> </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	2	BOOK INSIDE
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III.	<p style="text-align: center;">PART -III</p> <p style="text-align: center;">ANSWER ANY SIX OF THE FOLLOWING QUESTION NUMBER 33 IS COMPULSORY</p>	6 X 3 = 18	BOOK BACK / BOOK INSIDE / CREATIVE				
25	<table border="1"> <thead> <tr> <th>Taxonomy</th> <th>Systematics</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Discipline of classifying organisms into taxa. Governs the practices of naming, describing, identifying and specimen preservation. Classification + Nomenclature = Taxonomy </td> <td> <ul style="list-style-type: none"> Broad field of biology that studies the diversification of species. Governs the evolutionary history and phylogenetic relationship in addition to taxonomy. Taxonomy + Phylogeny = Systematics </td> </tr> </tbody> </table>	Taxonomy	Systematics	<ul style="list-style-type: none"> Discipline of classifying organisms into taxa. Governs the practices of naming, describing, identifying and specimen preservation. Classification + Nomenclature = Taxonomy 	<ul style="list-style-type: none"> Broad field of biology that studies the diversification of species. Governs the evolutionary history and phylogenetic relationship in addition to taxonomy. Taxonomy + Phylogeny = Systematics 	3	BOOK INSIDE
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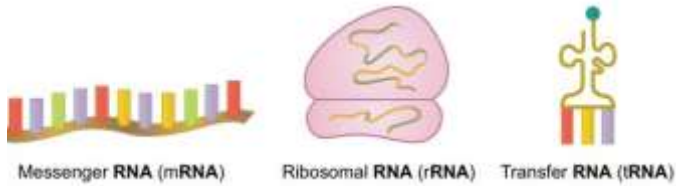
26	<ol style="list-style-type: none"> 1. Stomatal transpiration 2. Lenticular transpiration 3. Cuticular transpiration 	3	BOOK INSIDE
27	<ul style="list-style-type: none"> • Controlling all the cellular activities • Storing the genetic or hereditary information. • Coding the information in the DNA for the production of enzymes and proteins. • DNA duplication and transcription takes place in the nucleus. • In nucleolus ribosomal biogenesis takes place. <p>(ANY THREE POINT)</p>	3	BOOK INSIDE
28	<p>Some cells exit G1 and enters a quiescent stage called G0, where the cells remain metabolically active without proliferation. Cells can exist for long periods in G0 phase. In G0 cells cease growth with reduced rate of RNA and protein synthesis. The G0 phase is not permanent. Mature neuron and skeletal muscle cell remain permanently in G0. Many cells in animals remains in G0 unless called on to proliferate by appropriate growth factors or other extracellular signals. G0 cells are not dormant.</p>	3	BOOK BACK
29	 <p>Apical meristem Intercalary meristem Lateral meristem</p>	3	BOOK INSIDE
30	<p>They branch repeatedly to form dichotomously branched coral- like roots called coralloid roots. The cortical region of the coralloid root contains the Blue green alga – Anabaena sp. which helps in nitrogen fixation</p>	3	BOOK INSIDE
31	$\text{Br BrI} \oplus \ominus \text{K}_{(5)} \text{C}_5 \text{A}_{(\infty)} \text{G}_{(5)}$	3	BOOK BACK
32	<ul style="list-style-type: none"> • Helps to derive nutrition in Monotropa, a saprophytic angiosperm, 	3	BOOK INSIDE

	<ul style="list-style-type: none"> Improves the availability of minerals and water to the plants. Provides drought resistance to the plants Protects roots of higher plants from the attack of plant pathogens 		
33	Krebs cycle is primarily a catabolic pathway, but it provides precursors for various biosynthetic pathways there by an anabolic pathway too. Hence, it is called amphibolic pathway.	3	BOOK INSIDE

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IV.	PART -IV ANSWER ALL THE QUESTION	5 X 5 = 25	BOOK BACK / BOOK INSIDE CREATIVE														
34 (a)	<table border="1"> <thead> <tr> <th>Sap Wood (Alburnum)</th> <th>Heart Wood (Duramen)</th> </tr> </thead> <tbody> <tr> <td>Living part of the wood.</td> <td>Dead part of the wood.</td> </tr> <tr> <td>It is situated on the outer side of wood</td> <td>It is situated in the centre part of wood</td> </tr> <tr> <td>It is less in coloured</td> <td>It is dark in coloured</td> </tr> <tr> <td>Very soft in nature</td> <td>Hard in nature</td> </tr> <tr> <td>Tyloses are absent</td> <td>Tyloses are present</td> </tr> <tr> <td>It is not durable and not resistant to microorganisms</td> <td>It is more durable and resists microorganisms</td> </tr> </tbody> </table>	Sap Wood (Alburnum)	Heart Wood (Duramen)	Living part of the wood.	Dead part of the wood.	It is situated on the outer side of wood	It is situated in the centre part of wood	It is less in coloured	It is dark in coloured	Very soft in nature	Hard in nature	Tyloses are absent	Tyloses are present	It is not durable and not resistant to microorganisms	It is more durable and resists microorganisms	5	BOOK BACK
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34 (b)	<ul style="list-style-type: none"> All are globular proteins. They act as catalysts and effective even in small quantity. They remain unchanged at the end of the reaction. They are highly specific. They have an active site where the reaction takes 	5	BOOK BACK														

	<p>place.</p> <ul style="list-style-type: none"> Enzymes lower activation energy of the reaction they catalyse. 		
35 (a)	<p>1 HMP shunt is associated with the generation of two important products, NADPH and pentose sugars, which play a vital role in anabolic reactions.</p> <p>2 Coenzyme NADPH generated is used for reductive biosynthesis and counter damaging the effects of oxygen free radicals</p> <p>3 Ribose-5-phosphate and its derivatives are used in the synthesis of DNA, RNA, ATP, NAD⁺, FAD and Coenzyme A.</p> <p>4 Erythrose is used for synthesis of anthocyanin, lignin and other aromatic compounds</p> <p>5 It plays a role on fixation of CO₂ in photosynthesis through RUBP</p>	5	BOOK INSIDE
35 (b)	<p>Cut a branch of balsam plant and place it in a beaker containing eosin (red colour dye) water. After some time, a red streak appears on the stem indicating the ascent of water. Remove the plant from water and cut transverse section of the stem and observe it under the microscope. Only xylem element is coloured red, which indicates the path of water is xylem. Phloem is not colored indicating that it has no role in the ascent of sap</p> 	5	BOOK INSIDE

36 (a)	<p style="text-align: center;">Table 13.2: Differences between Photosystem I and Photosystem II</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Photosystem I</th> <th style="width: 50%;">Photosystem II</th> </tr> </thead> <tbody> <tr> <td>1. The reaction centre is P700</td> <td>1. Reaction centre is P680</td> </tr> <tr> <td>2. PS I is involved in both cyclic and non-cyclic.</td> <td>2. PS II participates in Non-cyclic pathway</td> </tr> <tr> <td>3. Not involved in photolysis of water and evolution of oxygen</td> <td>3. Photolysis of water and evolution of oxygen take place.</td> </tr> <tr> <td>4. It receives electrons from PS II during non-cyclic photophosphorylation</td> <td>4. It receives electrons by photolysis of water</td> </tr> <tr> <td>5. Located in unstacked region granum facing chloroplast stroma</td> <td>5. Located in stacked region of thylakoid membrane facing lumen of thylakoid.</td> </tr> <tr> <td>6. Chlorophyll and Carotenoid ratio is 20 to 30:1</td> <td>6. Chlorophyll and Carotenoid ratio is 3 to 7:1</td> </tr> </tbody> </table>	Photosystem I	Photosystem II	1. The reaction centre is P700	1. Reaction centre is P680	2. PS I is involved in both cyclic and non-cyclic.	2. PS II participates in Non-cyclic pathway	3. Not involved in photolysis of water and evolution of oxygen	3. Photolysis of water and evolution of oxygen take place.	4. It receives electrons from PS II during non-cyclic photophosphorylation	4. It receives electrons by photolysis of water	5. Located in unstacked region granum facing chloroplast stroma	5. Located in stacked region of thylakoid membrane facing lumen of thylakoid.	6. Chlorophyll and Carotenoid ratio is 20 to 30:1	6. Chlorophyll and Carotenoid ratio is 3 to 7:1	5	BOOK INSIDE
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36 (b)		5	BOOK BACK														
37 (a)	<p>• mRNA (messenger RNA): Single stranded, carries a copy of instructions for assembling amino acids into proteins. It is very unstable and comprises 5% of total RNA polymer. Prokaryotic mRNA (Polycistronic) carry coding sequences for many polypeptides. Eukaryotic mRNA (Monocistronic) contains information for only one polypeptide.</p> <p>• tRNA (transfer RNA): Translates the code from mRNA and transfers amino acids to the ribosome to build proteins. It is highly folded into an elaborate 3D structure and comprises about 15% of total RNA. It is also called as soluble RNA.</p> <p>• rRNA (ribosomal RNA): Single stranded, metabolically stable, make up the two subunits of ribosomes. It constitutes 80% of the total RNA. It is a polymer with varied length from 120–3000 nucleotides and gives ribosomes their</p>	5	BOOK INSIDE														

	<p>shape. Genes for rRNA are highly conserved and employed for phylogenetic studies</p>  <p>Messenger RNA (mRNA) Ribosomal RNA (rRNA) Transfer RNA (tRNA)</p>		
37 (b)	<ul style="list-style-type: none"> • Cytokinin promotes cell division in the presence of auxin (IAA). • Induces cell enlargement associated with IAA and gibberellins • Cytokinin can break the dormancy of certain light-sensitive seeds like tobacco and induces seed germination. • Cytokinin promotes the growth of lateral bud in the presence of apical bud. • Application of cytokinin delays the process of aging nutrient mobilization. It is known as Richmond Lang effect. • Cytokinin (i) increases rate protein synthesis (ii) induces the formation of inter-fascicular cambium (iii) overcomes apical dominance (iv) induces formation of new leaves, chloroplast and lateral shoots. • Plants accumulate solutes very actively with the help of cytokinins <p>(ANY FIVE POINTS)</p>	5	BOOK BACK
38 (a)	<p>1. Fixation of atmospheric nitrogen Di-nitrogen molecule from the atmosphere progressively gets reduced by addition of a pair of hydrogen atoms. Triple bond between two nitrogen atoms (N{N) are cleaved to produce ammonia (Figure 12.7). nitrogen fixation process requires Nitrogenase enzyme complex, Minerals (Mo, Fe and S), anaerobic condition, ATP, electron and glucose 6 phosphate as H1 donor. Nitrogenase enzyme is active only in anaerobic condition. To create this anaerobic condition a pigment known as leghaemoglobin is synthesized in the nodules which acts as oxygen scavenger and removes the oxygen. Nitrogen fixing bacteria in root nodules appears pinkish due to the</p>	5	BOOK BACK

	presence of this leghaemoglobin pigment.		
38 (b)	<p>descendingly imbricate aestivation.</p> <p>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.</p> <p>Gynoecium: Monocarpellary, unilocular, with many ovules on mariginal placentation, ovary superior, style simple and incurved with feathery stigma</p> <p>Fruit: Legume</p> <p>Seed: Non-endospermous, reniform.</p> <p>Floral Formula: $Br., Brl., \%, \overset{\sigma}{\underset{\rho}{\square}}, K_{(5)}, C_5, A_{(9)+1}, \underline{G}_1$</p>	5	BOOK BACK

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- Daily classes by **Namakkal Well Experienced Staff**
- Two year integrated program for **XI and XII - NEET.**
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- Weekly intensive test for **NEET.**
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- Learn with interest without stress.
- Daily practice test and monthly cumulative test for state board.
- Extra care for slow learners.