ISLAMIAH MAT HR SEC SCHOOL, KILAKARAI, RAMANATHAPURAM DT.

XI COMMON PUBLIC EXAMINATION, MARCH -2025 (17-03-2025)

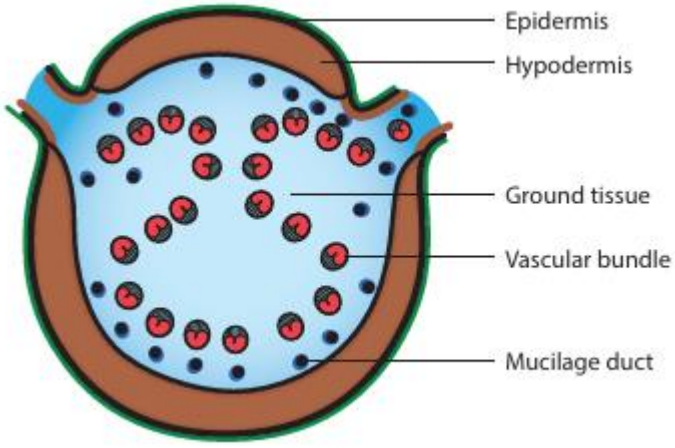
TENTATIVE ANSWER KEY
Question type A

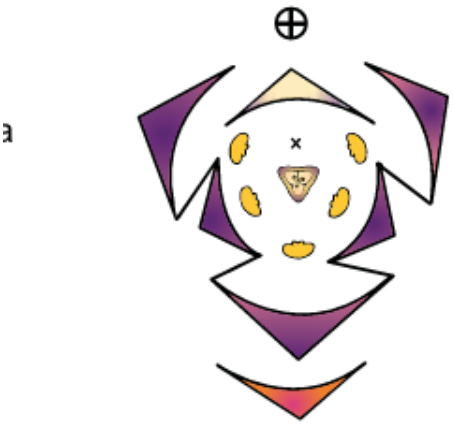
SUB: BOTANY MARKS: 70

Q.NO	CONTENT	MARKS	MODE OF QUESTION
I.	**PART -I** CHOOSE THE CORRECT ANSWER	15 X 1 =15	BOOK BACK / BOOK INSIDE/ CREATIVE
1	(d) (i) is not correct but (ii) and (iii) are correct	1	BOOK INSIDE
2	(a) Carry out photosynthetic reations	1	BOOK INSIDE
3	(d) before fertilization	1	BOOK BACK
4	(b) Artificial system of classification	1	BOOK INSIDE
5	(d) All the above	1	BOOK BACK
6	(b) (1)-(iii), (2)-(ii), (3)-(i), (4)-(iv)	1	BOOK INSIDE
7	(d) DPD= 0 atm; OP=20 atm; TP=10 atm;	1	BOOK BACK
8	(a) two homologous Chromosomes	1	BOOK BACK
9	(c) β-(1,4) glycosidic Linkage	1	BOOK INSIDE
10	(a) 6	1	BOOK BACK
11	(a) (1)-(iv), (2)-(iii), (3)-(i), (4)-(ii)	1	BOOK BACK
12	(b) lack of motile structure	1	BOOK BACK
13	(d) Collenchyma	1	BOOK INSIDE
14	(a) Chi-c	1	BOOK BACK
15	(b) Only ovary of the flower develops into fruit	1	BOOK BACK

<table>
<tr><th>Q.NO</th><th>CONTENT</th><th>MARKS</th><th>MODE OF QUESTION</th></tr>
<tr><td>II.</td><td>PART -II
ANSWER ANY SIX OF THE FOLLOWING
QUESTION NUMBER 24 IS COMPULSORY</td><td>6 X 2 = 12</td><td>BOOK BACK / BOOK INSIDE/ CREATIVE</td></tr>
<tr><td>16</td><td>Types of mycelia found in Agaricus
Three types of mycelia are seen namely primary mycelium, secondary mycelium and tertiary mycelium.</td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>17</td><td>Pycnoxylic
compact with narrow medullary ray-Pinus</td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>18</td><td>Phylloclades
Stem becomes modified into flattened, leaf like and becomes succulent in several species of Euphorbia. Such modified stem is called phylloclades
eg ANY ONE
Opuntia, Phyllocactus, Muehlenbeckia (flattened phylloclade) Casuarina, Euphorbia tirucalli, Euphorbia antiquorum (cylindrical phylloclade).</td><td>2</td><td>BOOK INSIDE</td></tr>
<tr><td>19</td><td>Difference between plant and animal cells
<table>
<tr><th>S. No</th><th>Plant cell</th><th>Animal Cell</th></tr>
<tr><td>1</td><td>Usually they are larger than animal cells</td><td>Usually smaller than plant cells</td></tr>
<tr><td>2</td><td>Cell wall present in addition to plasma membrane and consists of middle lamellae, primary and secondary walls</td><td>Cell wall absent</td></tr>
<tr><td>3</td><td>Plasmodesmata present</td><td>Plasmodesmata absent</td></tr>
<tr><td>4</td><td>Chloroplast present</td><td>Chloroplast absent</td></tr>
<tr><td>5</td><td>Vacuole large and permanent</td><td>Vacuole small and temporary</td></tr>
<tr><td>6</td><td>Tonoplast present around vacuole</td><td>Tonoplast absent</td></tr>
<tr><td>7</td><td>Centrioles absent except motile cells of lower plants</td><td>Centrioles present</td></tr>
<tr><td>8</td><td>Nucleus present along the periphery of the cell</td><td>Nucleus at the centre of the cell</td></tr>
<tr><td>9</td><td>Lysosomes are rare</td><td>Lysosomes present</td></tr>
<tr><td>10</td><td>Storage material is starch grains</td><td>Storage material is a glycogen granules</td></tr>
</table></td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>20</td><td>Significance of Mitosis
Any two points
1. Genetic stability – daughter cells are genetically identical to parent cells.
2. Growth – as
organisms grow, the number of cells making up their tissue increases. The new cells must be identical to the existing ones.
3. Repair of tissues - damaged cells must be replace by identical new
cells by mitosis.
4. Asexual reproduction – asexual reproduction resu</td><td>2</td><td>BOOK BACK</td></tr>
</table>

<table>
<tr><td></td><td>in offspring that are identical
to the parent. Example Yeast and Amoeba.
5. In flowering plants, structure such as bulbs, corms
tubers, rhizomes and runners are produced by
mitotic division. When they separate from the
parent, they form a new individual. The production
large numbers of offsprings in a short period of
time, is possible only by mitosis. In genetic
engineering and biotechnology, tissues are grown
by mitosis (i.e. in tissue culture).
6. Regeneration – Arms of star fish</td><td></td><td></td></tr>
<tr><td>21</td><td>Differentiate Pinus wood and Morus wood
<table><tr><th>Porous wood or Hard wood,
Example: Morus</th><th>Non porous wood or Soft wood,
Example: Pinus</th></tr><tr><td>Common in angiosperms</td><td>Common in gymnosperms</td></tr><tr><td>Porous because it contains vessels</td><td>Non-porous because it does not contain vessels</td></tr></table></td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>22</td><td>Floral formula
Br, Ebrl, ⊕ ♂ K (5) , C (5) , A (5) , G (5) .</td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>23</td><td>Types of RNA
mRNA
tRNA
rRNA</td><td>2</td><td>BOOK BACK</td></tr>
<tr><td>24</td><td>Uses of Plant Anti-transpirants
• Antitranspirants reduce the enormous loss of water by transpiration in crop plants.
• Useful for seedling transplantations in nurseries.</td><td>2</td><td>BOOK INSIDE</td></tr>
</table>

<table>
<tr><th>Q.NO</th><th>CONTENT</th><th>MARKS</th><th>MODE OF QUESTION</th></tr>
<tr><td>III.</td><td>PART -III
ANSWER ANY SIX OF THE FOLLOWING
QUESTION NUMBER 33 IS COMPULSORY</td><td>6 X 3 = 18</td><td>BOOK BACK / BOOK INSIDE/ CREATIVE</td></tr>
<tr><td>25</td><td>T.S. of Rachis
 
</td><td>3</td><td>BOOK BACK</td></tr>
<tr><td>26</td><td>Pinnate unicostate and palmate multicostate venation
<table>
<tr><th>Pinnate unicostate venation</th><th>Palmate multicostate venation</th></tr>
<tr><td>It has only one midrib a the centre from which lateral branches arise a form a network</td><td>There are two or more principal veins arising from a point and proce upwards. Pinnate unicostate and Palmate multicostate types of venation occur both reticulate, and parallel venation.</td></tr>
</table></td><td>3</td><td>BOOK BACK</td></tr>
<tr><td>27</td><td>Musa paradisia</td><td>3</td><td>BOOK INSIDE</td></tr>
</table>



Floral diagram

Floral formula : Bisexual flower

$Br.,Ebrl.,\%,\♂,\♀, P_{(3+2)+1}, A_{3+3}, \overline{G}_{(3)}$

28 **Differentiate Cytokinesis in plant and animal** — 3 — BOOK BACK

Cytokinesis in plant	Cytokinesis in animal
Karyokinesis	Cytokinesis
Involves division of nucleus	Involves division of cytoplasm.
Nucleus develops a constriction at the center and becomes dumbell shaped.	Plasma membrane develops a constriction along nuclear constriction
Constriction deepens and divides the nucleus into two.	It deepens centripetally and finally divides the cell into two cells

29 **Tyloses** — 3 — BOOK INSIDE

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**.

30 **List out the non-photosynthetic parts of a plant that needs a supply of sucrose** — 3 — BOOK BACK

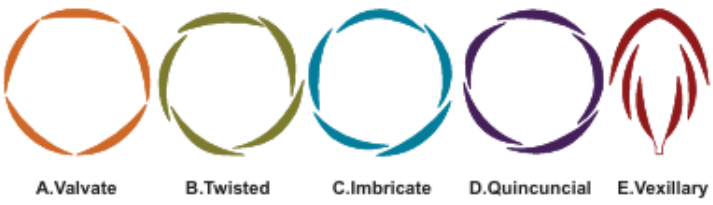
1. Roots
2. Stems of Older Plants
3. Flowers and fruits

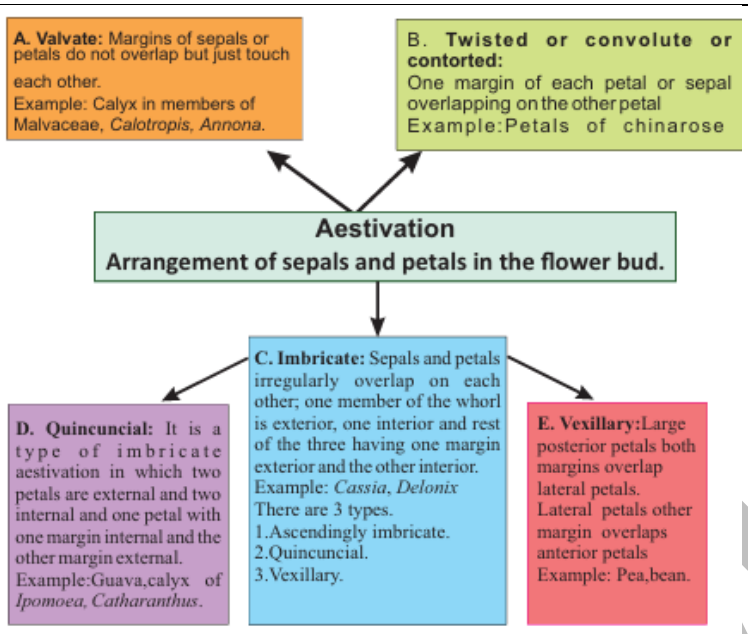
31 **Differences between Photorespiration and Dark Respiration** — 3 — BOOK INSIDE

	Table 13.5: Differences between Photorespiration and Dark Respiration **Photorespiration** / **Dark respiration** 1. It takes place in photosynthetic green cells / 1. It takes place in all living cells 2. It takes place only in the presence of light / 2. It takes place all the time 3. It involves chloroplast, peroxisome and mitochondria / 3. It involves only mitochondria 4. It does not involve Glycolysis, Kreb's Cycle, and ETS / 4. It involves glycolysis, Kreb's Cycle and ETS 5. Substrate is glycolic acid / 5. Substrate is carbohydrates, protein or fats 6. It is not essential for survival / 6. Essential for survival 7. No phosphorylation and yield of ATP / 7. Phosphorylation produces ATP energy 8. $NADH_2$ is oxidised to NAD^+ / 8. NAD^+ is reduced to $NADH_2$ 9. Hydrogen peroxide is produced / 9. Hydrogen peroxide is not produced 10. End products are CO_2 and PGA / 10. End products are CO_2 and water		
32	**Phosphorylation reactions in EMP pathway** 1) Glucose⟶Glucose - 6 - Phosphate **Enzyme : Hexokinase** 2) Fructose - 6 - Phosphate⟶ Fructose -1, 6 - Bisphosphate **Enzyme : Phosphofructokinase** 3) Glyceraldehyde ⟶1, 3 Bisphospho 3 Phosphate Glycerate **Enzyme: Glyceraldehyde -3- Phosphate dehydrogenase** **Dephosphorylation reactions** 1) 1,3 Bisphospho Glycerate ⟶ 3-Phospho glycerate **Enzyme : Phosphoglycerate Kinase** 2) Phospho Enol pyruvate⟶Pyruvate **Enzyme: Pyruvate kinase.**	3	BOOK BACK
33	**Anaerobic respiration is infinity** If the respiratory substrate is a carbohydrate it will be incompletely oxidised when it goes through anaerobic respiration and the RQ value will be infinity.	3	BOOK INSIDE

Q.NO	CONTENT	MARKS	MODE OF QUESTION
IV.	**PART –IV** ANSWER ALL THE QUESTION	5 X 5 = 25	BOOK BACK / BOOK INSIDE CREATIVE
34 (a)	**five Kingdom classification** **Merits** • The classification is based on the complexity of cell structure and organization of thallus. • It is based the mode of nutrition • Separation of fungi from plants • It shows the phylogeny of the organisms **Demerits** • 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 system.	5	BOOK BACK
34 (b)	**Aestivation** Arrangement of sepals and petals in the flower bud is said to be aestivation	5	BOOK INSIDE

Criteria	Kingdom				
	Monera	Protista	Fungi	Plantae	Animalia
Cell type	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Level of organization	Unicellular	Unicellular	Multicellular and unicellular	Tissue/organ	Tissue/organ/organ system
Cell wall	Present (made up of Peptidoglycan and Mucopeptides)	Present in some (made up of cellulose), absent in others	Present (made up of chitin or cellulose)	Present (made up of cellulose)	absent
Nutrition	Autotrophic (Phototrophic, Chemoautotrophic) Heterotrophic (parasitic and saprophytic)	Autotrophic-Photosynthetic. Heterotrophic	Heterotrophic-parasitic or Saprophytic	Autotrophic (Photosynthetic)	Heterotrophic (Holozoic)
Motility	Motile or non-motile	Motile or non-motile	Non-motile	Mostly Non-motile	Mostly motile
Organisms	Archaebacteria, Eubacteria, Cyanobacteria, Actinomycetes and Mycoplasma	Chrysophytes, Dinoflagellates, Euglenoids, Slime molds, *Amoeba*, *Plasmodium*, *Trypanosoma*, *Paramecium*	Yeast, Mushrooms and Molds	Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms	Sponges, Invertebrates and Vertebrates





35 (a) **Economic importance of the family Euphorbiacea** 5 BOOK INSIDE

Any 5 points

Economic importance	Binomial	Useful part	Uses
Food plant	*Emblica officinalis* (Nellikai)	Fruits	Rich in vitamin C, which are edible and pickled.
	P. acidus (அலறுநெல்லி)		
	Manihot esculenta (Maravalli kizhanku / Tapioca)	Tuberous roots	Roots are rich in starch and used for preparing bread, biscuits, chips and other food stuffs.
	Sauropus androgynous	Leaves	Greens (multi vitamin plant)
Oil plant			
Croton oil	*Croton tiglium*	Seed	Used as a powerful purgative and also to treat skin diseases.
Castor Oil	*Ricinus communis* (Amanakku/Castor)	Seeds	Used as vegetable oil, ricinoleic acid present in this oil eliminate acne causing bacteria apart from that it acts as laxative and lubricant.
Jatropha Oil	*Jatropha curcas* (Kattamanakku)	Seeds	Used for biofuels.
Rubber:	*Hevea brasiliensis* (Para rubber)	Coagulated latex	Latex is used in rubber products like tube and tyre.
	Manihot glaziovii (Manicoba rubber)		
Medicinal plants	*Euphorbia resinifera*	Latex	*Euphorbium* drug is obtained from the latex and used as a purgative.
	Euphorbia hirta (அம்மான் பச்சரிசி)	Whole plant	Lactogogue
	Mallotus philippenensis	Fruits	Used as anthelmintic.
	Phyllanthus amarus (Keezhanelli)	Entire shoot system	Used to treat Jaundice.

Economic importance	Binomial	Useful part	Uses
	Jatropha gossypifolia	Leaves and roots	Used in the treatment of leprosy and snakebite.
	Croton tiglium (நேர்வாளம்)	Seed	Purgative
	Ricinus communis	Seed oil	Purgative
Dye yielding plants			
Kamela dye,	*Mallotus philippenensis*	Fruits	Used for dyeing wool and silk.
Blue dye	*Jatropha curcas*	Bark	Used for dyeing clothes and fishing nets.
Purple dye	*Chrozophora tinctoria*	Bark	Used in textile Industry
Red dye	*Phyllanthus reticulatus*	Roots	Used for tanning and *dyeing* fishing lines and nets
Timber plant	*Aporosa dioica,* *Bischofia javanica,* ([illegible]) *Drypetes roxburghii* ([illegible])	Timber	Used for packing cases, tea boxes, veneers, plywood, match industry and several other similar purpose.
Ornamental plant	*Acalypha ciliata,* *A. hispida,* *Codiaeum varigatum* *Croton tiglium* *Euphorbia antiquorum,* *E.pulcherrima, E.splendens.* *E. tirucalli* *Jatropha gossypifolia*	Plants	Grown as ornamental plants.

35 (b) **Differences between Prokryotes and Eukaryotes** — 5 — BOOK BACK

Any 5 points

Features	Prokaryotes	Mesokaryotes	Eukaryotes
Size of the cell	~1-5µm	~5-10µm	~10-100µm
Nuclear character	Nucleoid, no true nucleus,	Nucleus with nuclear membrane	True nucleus with nuclear membrane
DNA	Usually circular without histone proteins	Usually linear but without histone proteins	Usually linear with histone proteins
RNA/Protein synthesis	Couples in cytoplasm	Similar with eukaryotes	RNA synthesis Inside nucleus/ Protein synthesis in cytoplasm
Ribosomes	50S+ 30S	60S + 40S	60S + 40S
Organelles	Absent	Present	Numerous
Cell movement	Flagella	Gliding and flagella	Flagella and cilia
Organization	Usually single cell	Single and colony	Single, colonial and multicellular
Cell division	Binary fission	Binary fission	Mitosis and meiosis
Examples	Bacteria and Archaea	Dinoflagellate, Protozoa	Fungi, plants and animals

No need mesokaryotes

36 (a) **Properties of Enzyme** — 5 — BOOK INSIDE

Any 5 points

- 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 place.
- Enzymes lower activation energy of the reaction they catalyse.

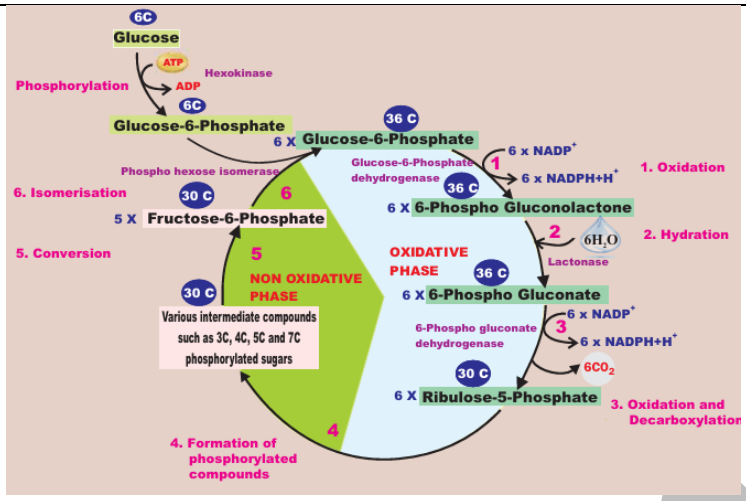
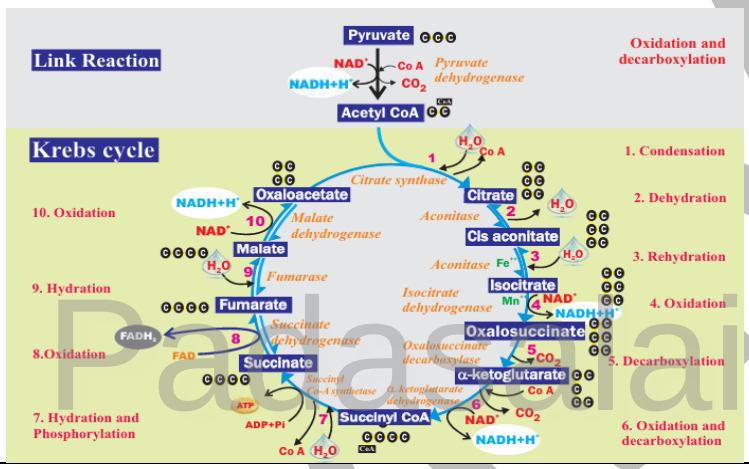
<table>
<tr>
<td>36 (b)</td>
<td>Anatomical differences between dicot stem and monocot stem
<table>
<tr><th colspan="4">Table 9.4: Anatomical differences between dicot stem and monocot stem</th></tr>
<tr><th>S.No.</th><th>Characters</th><th>Dicot Stem</th><th>Monocot Stem</th></tr>
<tr><td>1.</td><td>Hypodermis</td><td>Collenchymatous</td><td>Sclerenchymatous</td></tr>
<tr><td>2.</td><td>Ground tissue</td><td>Differentiated into cortex, endodermis and pericycle and pith</td><td>Not differentiated, but it is a continuous mass of parenchyma.</td></tr>
<tr><td>3.</td><td>Starch Sheath</td><td>Present</td><td>Absent</td></tr>
<tr><td>4.</td><td>Medullary rays</td><td>Present</td><td>Absent</td></tr>
<tr><td rowspan="3">5.</td><td rowspan="3">Vascular bundles</td><td>(a) Collateral and open</td><td>(a) Collateral and closed</td></tr>
<tr><td>(b) Arranged in a ring</td><td>(b) Scattered in ground tissue</td></tr>
<tr><td>(c) Secondary growth occurs</td><td>(c) Secondary growth usually does not occur.</td></tr>
</table></td>
<td>5</td>
<td>BOOK BACK</td>
</tr>
<tr>
<td>37 (a)</td>
<td>Insectivorous mode of nutrition in angiosperms
Plants which are growing in nitrogen deficient areas develop insectivorous habit to resolve nitrogen deficiency.

a. Nepenthes (Pitcher plant): 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

b. Drosera (Sundew): It consists of long club shaped tentacles which secrete sticky digestive fluid which looks like a sundew.

c. Utricularia (Bladder wort): Submerged plant in which leaf is modified into a bladder to collect insect water.

d. Dionaea (Venus fly trap): Leaf of this plant modified into a colourful trap. Two folds of lamina consist of sensitive trigger hairs and when insects touch the hairs it will close.</td>
<td>5</td>
<td>BOOK BACK</td>
</tr>
<tr>
<td>37 (b)</td>
<td>name of alternate way of glucose breakdown
Pentose Phosphate Pathway (Phospho Gluconate Pathway)</td>
<td>5</td>
<td>BOOK BACK</td>
</tr>
</table>

	 **Or Explain**		
38 (a)	**Krebs cycle** 	5	BOOK BACK
38 (b)	Gaseous Phytohormone Ethylene is a Gaseous Phytohormone **Any 5 point** **Physiological Effects** • Ethylene stimulates respiration and ripening in fruits It stimulates radial growth in stem and root and inhibits linear growth. • It breaks the dormancy of buds, seeds and storage organs. • It stimulates formation of abscission zone in leaves, flowers and fruits. This makes the leaves to shed prematurely. • Inhibition of stem elongation (shortening the internode). • In low concentration, ethylene helps in root initiation. • Growth of lateral roots and root hairs. This increases the absorption surface of the plant	5	BOOK INSIDE

	roots. • The growth of fruits is stimulated by ethylene in some plants. It is more marked in climacteric fruits. • Ethylene causes epinasty		

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