

**FIRST YEAR HIGHER SECONDARY MODEL EXAMINATION 2022**

**Part – III**

**BIOLOGY**

**PART - A BOTANY**

**QP :ME 626**

**KEY**

**Maximum score: 30**

Q.No.	SECTION –I	Split score	Total score
1	Floridean starch	1	1
2	a) Guttation	1	1
3	Kranz anatomy	1	1
4	Glycolysis	1	1
	<b>SECTION-II</b>		
5	-Impermeable and hard seed coat. -Presence of chemical inhibitors such as abscisic acids, phenolic acids, para-ascorbic acids etc. -Immature embryo. [any2]	1 1	2
6	Light, CO <sub>2</sub> concentration, Temperature, Water.	½ x4	2
7	- Mitosis results in the production of diploid daughter cells with identical genetic complement. - The growth of multicellular organisms is due to mitosis. - To restore the nucleo-cytoplasmic ratio. - Cell repair [Any 2]	1 1	2
8	Mesosomes are special membranous structure of bacteria which is formed by the extension of plasma membrane in to the cell. (b)They help in cell wall formation. DNA replication and distribution to daughter cells. Help in respiration. Secretion processes. To increase the surface area of plasma membrane and enzymatic content [Any 2]	1  ½ x2	2
9	A-citric acid, B- alpha ketoglutaric acid, C- succinic acid, D-oxaloacetic acid	½ x4	2
10	-Sieve tube -Companion cell -Phloem parenchyma -Phloem fibre / bast fibres	½ x4	2
11	a) Interphase and M phase ( Mitosis) b) (a) G1 phase , (b) G2 phase	1 ½ ½	2
12	RER-Rough endoplasmic reticulum bearing ribosomes on their surface. - Involved in protein synthesis and secretion . SER- Smooth endoplasmic reticulum devoid of ribosomes on their surface . Involved in lipid synthesis.	½ x4	2
13	In grasses, certain adaxial epidermal cells along the veins modify themselves into large,empty,colourless cells.These are called bulliform cells. When bulliform cells are flaccid due to water stress ,they make the leaves curl inwards to minimise water loss.	1  1	2
14	a) Region of Maturation b) Region of Elongation c) Region of Meristematic activity Function – Absorption of water and minerals	½ x4	2

15	Volvox-Algae Pinus-Gymnosperm Salvinia-Pteridophyte Marchantia-Bryophyte		$\frac{1}{2} \times 4$	2														
16	a) Dead remains of diatoms are known as 'diatomaceous earth' Function-Used in polishing / Filtration of oils and syrups [Any 1]		1 1	2														
17	1- Antiport 2- Symport		1 1	2														
<b>SECTION III</b>																		
18	Phyllotaxy is the pattern of arrangement of leaves on the stem or branch. (b) Alternate –A single leaf at each node Opposite – A pair of leaves at each node Whorled – More than two leaves per node [Any 2]		1 1 1	3														
19	(a) Rhizobium bacteria contact a susceptible root hair, divide near it. (b) Successful infection of the root hair causes it to curl. (c) Infected thread carries the bacteria to the inner cortex. (d)The bacteria get modified into rod-shaped bacteroids and cause inner cortical and pericycle cells to divide. (e)Division and growth of cortical and pericycle cells lead to nodule formation, (f) A mature nodule is complete with vascular tissues continuous with those of the root.		$\frac{1}{2} \times 6$	3														
20	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Aerobic respiration</td> <td style="width: 50%;">Fermentation</td> </tr> <tr> <td>Complete oxidation</td> <td>Incomplete oxidation</td> </tr> <tr> <td>Takes place in the presence of oxygen</td> <td>Takes place in the absence of oxygen</td> </tr> <tr> <td>Large amount of energy is released</td> <td>Less amount of energy is released</td> </tr> <tr> <td>Occur in Cytoplasm and Mitochondria</td> <td>Occur in cytoplasm</td> </tr> <tr> <td></td> <td>2 ATP are produced</td> </tr> <tr> <td>Total 36 ATP are produced</td> <td>[Any such 3 points]</td> </tr> </table>	Aerobic respiration	Fermentation	Complete oxidation	Incomplete oxidation	Takes place in the presence of oxygen	Takes place in the absence of oxygen	Large amount of energy is released	Less amount of energy is released	Occur in Cytoplasm and Mitochondria	Occur in cytoplasm		2 ATP are produced	Total 36 ATP are produced	[Any such 3 points]		1 1 1	3
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22	a) Chlorophyll a b) Chlorophyll b/ Xanthophylls/Carotenoids c) Absorb light and transfer the energy to chlorophyll a/ protect chlorophyll a from photo-oxidation		1 1 1	3														