FIRST YEAR IMROVEMENT EXAMINATION JANUARY 2022

FINALIZED ANSWER KEY FOR VALUATION

BOTANY

FY-426 **TOTAL SCORE 30**

<table>
<tr><th>Q.No.</th><th></th><th>SCORING INDICATORS</th><th>SPLITTED SCORE</th><th>TOTAL SCORE</th></tr>
<tr><td>I.
1</td><td></td><td>1-6 ANY THREE
Eukaryote /Unicellular eukaryotes/Single celled eukaryotes</td><td>
1</td><td>
1</td></tr>
<tr><td>2</td><td></td><td>Racemose</td><td>1</td><td>1</td></tr>
<tr><td>3</td><td></td><td>Metaphase</td><td>1</td><td>1</td></tr>
<tr><td>4</td><td></td><td>Ethylene</td><td>1</td><td>1</td></tr>
<tr><td>5</td><td></td><td>ii)Saprophytes: absorb organic matter from dead substrates</td><td>1</td><td>1</td></tr>
<tr><td>6</td><td></td><td>Ammonification</td><td>1</td><td>1</td></tr>
<tr><td>II.</td><td></td><td>7-24 ANY NINE</td><td></td><td></td></tr>
<tr><td>7</td><td></td><td>Male sex organ- Antheridium/Antheridiophore
Female sex organ- Archegonium/Archegoniophore</td><td>1
1</td><td>2</td></tr>
<tr><td>8</td><td></td><td><table><tr><th>A</th><th>B</th></tr><tr><td>i)Chloroplast</td><td>Contains chlorophyll/ Contain carotenoids</td></tr><tr><td>ii)Amyloplast</td><td>Store carbohydrate</td></tr><tr><td>iii)Elaioplast</td><td>Store oils and fats</td></tr><tr><td>iv)Chromoplast</td><td>Contains carotenoids</td></tr></table></td><td>1/2 x4</td><td>2</td></tr>
<tr><td>9</td><td></td><td>• Tissue made up of only single type of cell/Permanent tissues having cells similar in function.
• Parenchyma , Collenchyma , Sclerenchyma , Chlorenchyma (any two such tissues)</td><td>1
½ + 1/2</td><td>2</td></tr>
<tr><td>10</td><td>a

b</td><td>• Palisade parenchyma/palisade
• Spongy parenchyma/spongy
Photosynthesis / Contain chloroplast and photosynthesis</td><td>½
½
1</td><td>2</td></tr>
<tr><td>11</td><td></td><td>Number of chromosomes in the parent cell and progeny cell is the same / Formation of genetically identical daughter cells.</td><td>2</td><td>2</td></tr>
<tr><td>12</td><td></td><td><table><tr><th>DICOT ROOT</th><th>DICOT STEM</th></tr><tr><td>a)Presence of casparian strips</td><td>b)Vascular bundles arranged in the form of a ring</td></tr><tr><td>c)Two or four xylem and phloem patches</td><td>d)Conjoint ,open, vascular bundles with endarch protoxylem</td></tr></table></td><td>½ x4</td><td>2</td></tr>
</table>

13		• Apoplast • Symplast OR Explanation of these two pathways without the term give 2 scores	1 1	2
14		Cell wall formation ,DNA replication and distribution to daughter cells, respiration, secretion, increase the surface area of plasma membrane and enzymatic content . (Any two such responses)	1 +1	2
15		• Minerals are present in the soil as charged particles (ions) which can not move across cell membrane. • The concentration of minerals in the soil is lower than the concentration of minerals in the root.	1 1	2
16		• Alternate:- Single leaf arises at each node in alternate manner. • Opposite:- A pair of leaves arise at each node and the opposite to each other. OR Diagram showing the alternate and opposite phyllotaxy give full score 2	1 1	2
17		• Metacentric-Chromosome has middle centromere with two equal arms. • Sub-metacentric-Centromere slightly away from the middle of the chromosome with one shorter arm and one long arm. • Acrocentric- Centromere is situated close to its end and form one extremely short and one long arm. • Telocentric- Chromosome has a terminal centromere. (Any one of the above mentioned chromosome with its explanation / its diagrammatic representation give 1+1=2 score)	1+1	2
18		a) Rhodophyceae b) Green algae c) Brown algae d) Starch	½ x4	2
19		Impermeable seed coat Hard seed coat Presence of chemical inhibitors Presence of abscisic acid, phenolic acids, para- ascorbic acid Immature embryos (Any two such relevant reasons)	1 +1	2
20	a	• Carboxylation • Reduction • Regeneration	½ ½ ½	2
	b	RuBP (Ribulose – 1,5 – bisphosphate)	½	

<table>
<tr><td>21</td><td>a

b</td><td>Breakdown of glucose to pyruvic acid /Glucose undergoes partial oxidation to form two molecules of pyruvic acid/ Splitting of glucose.
Cytoplasm/Cytosol</td><td>1

1</td><td>2</td></tr>
<tr><td>22</td><td></td><td>• Special type of leaf anatomy /KRANZ anatomy
• Tolerate high temperature
• Response to high light intensities
• Lack of photorespiration
• Greater productivity / biomass
• C4 pathway /Hatch and Slack pathway
(Any two such relevant responses of C4 plants)</td><td>1+1</td><td>2</td></tr>
<tr><td>23</td><td></td><td>a) NADPH and ATP formed
c) Splitting of water occurs
d) Both photosystems involved
f) Oxygen is evolved</td><td>½x4</td><td>2</td></tr>
<tr><td>24</td><td>a
b</td><td>Chlorophyll b, Xanthophylls, Carotenoids (any two)
• Absorb light
• Transfer light energy to chlorophyll a
• Protect chlorophyll a from photo-oxidation
• Enable a wider range of wavelength of incoming light to be utilised for photosynthesis.
(Any one such function)</td><td>½+ ½

1</td><td>2</td></tr>
<tr><td>III</td><td></td><td>ANY THREE 25- 30</td><td></td><td></td></tr>
<tr><td>25</td><td></td><td>
<table>
<tr><th>ANAEROBIC RESPIRATION</th><th>AEROBIC RESPIRATION</th></tr>
<tr><td>Partial breakdown of glucose</td><td>Complete breakdown of Glucose</td></tr>
<tr><td>Absence of oxygen</td><td>Presence of oxygen</td></tr>
<tr><td>Less energy is generated</td><td>More energy is generated</td></tr>
<tr><td>Site is cytoplasm</td><td>Site is mitochondria</td></tr>
<tr><td>End products are ethanol/Ethyl alcohol and carbon dioxide/ Lactic acid</td><td>End products are Carbondioxide, water</td></tr>
<tr><td colspan="2">Any two differences from each type
OR
Summarised explanation or equation of aerobic and anaerobic respiration</td></tr>
</table>
</td><td>1+1</td><td rowspan="2">3</td></tr>
<tr><td></td><td></td><td>Ethyl alcohol/ethanol and carbon dioxide
OR
Three correct responses of each type /Explanation about two types of respiration give full score 3</td><td>1</td></tr>
</table>

26	a b c	ABA/Abscisic acid Gibberellins Auxin	1 1 1	3
27	a b	Leptotene- Zygotene- Pachytene- Diplotene – Diakinesis Pachytene	½ x5 ½	3
28		The compounds that are oxidised during respiration.	1	3
		Carbohydrates/glucose, proteins, fats, organic acids (Any two)	1+1	
29		• Rhizobia multiply and colonise the surroundings of root. • It get attached to epidermal and root hair cells/ bacteria contact a susceptible root hair and divide. • Root hair become curled. • Formation of infection thread. • Infected thread carries the bacteria to the inner cortex. • Bacteria get modified into rod -shaped bacteroids. • Inner cortical and pericycle cells divide and form root nodules OR Diagrammatic representation of development of root nodules give full score 3	½ x6	3
30	a	A-Valvate B-Twisted C-Vexillary/Papilionaceous	½ ½ ½	3
	b	5 petals Polypetalous Papilionaceous Posterior standard/Large standard Two lateral petals (wings) Two anterior petals (keel) (Any three above responses) OR The largest /standard petal overlaps the two lateral/wing petals which in turn overlap the two smallest anterior petal/keel. (give 1 ½ Score)	½ x3	
		TOTAL SCORE	60	60

Scheme finalized by

SL NO	PEN NUMBER	NAME	MOBILE NO	SIGNATURE
1	210651	BINDU.K.C	9446721871	
2	210127	SURESH KUMAR.P	9495633040	
3	415315	SHINY GEORGE	9446718834	
4	411825	SETHUMADHAVAN.T	9744474630	