

DIRECTORATE OF GOVERNMENT EXAMINATION, CHENNAI-6
HIGHER SECONDARY SECOND YEAR PUBLIC EXAMINATION. MAY- 2022
BIO- BOTANY Answer Key (NEW SYLLABUS)

NOTE:

1. Answer written only in **BLACK** or **BLUE** should be evaluated
2. Choose the correct answer and write the option code

SECTION –1

Total marks 35

Note: - Answer all the questions

8 X 1 =8

Q.No	ANSWER			
	TYPE- A		TYPE- B	
1	a	GAATTC	c	Agarose Blotting Techniques
2	c	Soil	b	Microspore
3	b	Lamiaceae	c	Removal of plants and trees
4	c	Removal of plants and trees	a	Intravarietal
5	c	Agarose Blotting Techniques	a	GAATTC
6	b	Microspore	b	Lamiaceae
7	d	12 : 3 : 1	c	Soil
8	a	Intravarietal	d	12 : 3 : 1

SECTION – 2

Note: - Answer any four questions

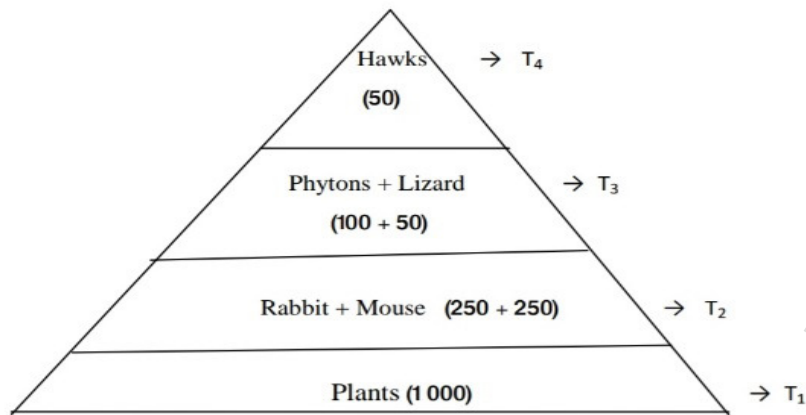
4 X 2 =8

Q.N o	ANSWERS	MARKS	
9	<u>Mellitophily:-</u> Pollination by Bees		2
10	<ul style="list-style-type: none"> • Exonucleases (Or) Bal 31, Exonuclease III (Any one example) • Endonucleases (Or) Hind II, EcoRI, PvuI, BamHI, TaqI. (Any one example) 	1	2
11	<u>Myrmecophily:</u> Pollination by ants (Or) Ants act as body guards of the plants against any disturbing agent and the plants in turn provide food and shelter to these ants.		2

12

Pyramid

Pyramid of number



1/2

1 1/2

2

13

Microbial inoculants – increase the soil fertility:-

- Efficient in fixing nitrogen,
- Solubilising phosphate
- Decomposing cellulose,
- Increase the biological activity
- They are designed to improve the soil fertility
- Increase plant growth,
- They are eco-friendly
- Organic agro inputs
- more efficient and cost effective than chemical fertilizers

(Any two Points)

2×1=2

2

14

Organic farming:-

- It is an alternative agricultural system.
- Plants / crops are cultivated in natural ways by using biological inputs.

1
1

2

SECTION – 3**Answer any three of the following questions.****Q.No 19 is compulsory****3x3=9**

15

Functions of Tapetum

- Supplies nutrition to the developing microspores
- Contributes sporopollenin through ubisch bodies thus plays an important role in pollen wall formation.
- The pollenkitt material is contributed by tapetal cells and is later transferred to the pollen surface.
- Exine proteins responsible for 'rejection reaction' the stigma are derived from tapetal cells.

(Any Three Points)

3 x 1=3

3

16

Difference between Missense and Non sense Mutation

Missense mutation	Non-Sense mutation
The codon for one amino acid is changed into a codon for another amino acid.	The codon for one amino acid is changed into a termination or stop codon

(OR)

Missense mutation	Non-Sense mutation
Change in amino acid encoded	Creates translational termination codon(UAA, UAG,UGA)

3

17

pBR322:-

- In pBR, p denotes plasmid,
- B and R respectively the names of scientist Boliver and Rodriguez
- The number 322 is the number of plasmid developed from their laboratory

1

1

1

3

18.

Carbon Capture and Storage (CCS)

Carbon sequestration is the process of capturing and storing CO₂ which reduces the amount of CO₂ in the atmosphere with a goal of reducing global climate change.

3

19

Distinguish Habitat and Niche:-

s. no	Habitat	Niche
1	A specific physical space occupied by an organism (species)	A functional space occupied by an organism in the same eco-syste
2	Same habitat may be shared by many organisms (species)	A single niche is occupied by a single species
3	Habitat specificity is exhibited by organism.	Organisms may change their niche with time and season

1

1

1

3

SECTION – 4

Answer all the questions 5 x 2 =10

20

(a)

Parthenocarpy

- Fruit like structure may develop from the ovary without fertilization.
- fruits will not have true seeds. Ex: Banana, Grapes and Papaya.

1

1

	<p>Significance Parthenocarpic fruits</p> <ul style="list-style-type: none"> Seedless fruits have great significance in horticulture. Seedless fruits have great commercial importance. Seedless fruits are useful for the preparation of jams , jellies, sauces,fruit drinks. High proportion of edible part is available in parthenocarpic fruits due to the absence of seeds. (any 3 points) 	3	5												
(b)	<p>Differentiate Incomplete Dominance and Co- Dominance</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Incomplete dominance</th> <th>Co-dominance</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>When one allele is not completely dominant to another allele it shows incomplete dominance</td> <td>This pattern occurs due to simultaneous (joint) expression of both alleles in the heterozygote.</td> </tr> <tr> <td>2.</td> <td>The F₁ heterozygous phenotype differs from both the parental homozygous phenotype</td> <td>The F₁heterozygote genotype gives rise to a phenotype distinctly different from either of the homozygous genotype.</td> </tr> <tr> <td>3.</td> <td>Ex: <i>Mirabilis jalapa</i> (or) 4 O` clock plant</td> <td>Ex: Red and White flowers of Camellia (or) Sickle cell haemoglobin (or) ABO blood group in humanbeings</td> </tr> </tbody> </table>	S. No	Incomplete dominance	Co-dominance	1.	When one allele is not completely dominant to another allele it shows incomplete dominance	This pattern occurs due to simultaneous (joint) expression of both alleles in the heterozygote.	2.	The F ₁ heterozygous phenotype differs from both the parental homozygous phenotype	The F ₁ heterozygote genotype gives rise to a phenotype distinctly different from either of the homozygous genotype.	3.	Ex: <i>Mirabilis jalapa</i> (or) 4 O` clock plant	Ex: Red and White flowers of Camellia (or) Sickle cell haemoglobin (or) ABO blood group in humanbeings	2 2 1	5
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21	<p>Applications of Plant Tissue Culture</p> <ul style="list-style-type: none"> Improved hybrids production through somatic hybridization. Encapsulated seed or synthetic seeds help in conservation of plant biodiversity. Production of disease resistant plants through meristem and shoot tip culture. Production of stress resistant plants like herbicide tolerant, heat tolerant plants. Micropropagation technique to obtain plantlets of both crop and tree species within a short span of time. Production of secondary metabolites from cell culture utilized in pharmaceutical, cosmetic and food industries. <p>(Any fivepoints)</p>		5												
(b)	<p>King and Queen of Spices</p> <p>King of spices – <i>Piper nigrum</i>(or) black pepper</p> <p>Uses</p> <ul style="list-style-type: none"> Used for flavouring in the preparation of sauces, soups, curry powder andpickles. Used in medicine as an aromatic stimulant for enhancing salivary and gastric secretions and also as a stomachic. Pepper also enhances the bio-absorption of medicines . <p>Queen of Spices- <i>Elettariacardamomum</i>(or) Cardamom.</p> <p>Uses</p> <ul style="list-style-type: none"> used for flavouring confectionaries,bakery products and beverages. Seeds are used in the preparation of curry powder ,pickles and cakes. Medicinally, it is employed as a stimulant and carminative Chewed as a Mouth freshener. <p>(Any three points)</p>	1 1½ 1 1½	5												