

Sethu Bhaskara Matric Hr. Sec. School.

Class: 12 Common Quarterly Exam 2026-27

Bio - Botany Answer Key Marks: 35

Section - I

I. Choose the correct answer:

8 x 1 = 8

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|--|----|
| 1. a) Microspore | 1m |
| 2. b) Callus undergo differentiation and produce somatic embryos | 1m |
| 3. d) Confer resistance to antibiotics | 1m |
| 4. b) Chlorella | 1m |
| 5. c) Nucellus - Nutritive tissue for developing embryo | 1m |
| 6. a) 34 and 37 | 1m |
| 7. d) Four | 1m |
| 8. d) E. Baur | 1m |

Section - II

II. Answer any four questions:

4 x 2 = 8

9. Draw and label Mature Dicot embryo:

* Diagram

* Labels - (Any-2)

1m

1m

10. Reproduction:

* Reproduction is a vital process for the existence of a species. It also brings suitable changes through variation in the offsprings for the survival on the earth.

2m

11. Lethal genes:

* An allele which has a potential to cause the death of an organism is lethal gene (or) lethal allele.

2m

12. Gene mapping:

* The diagrammatic representation of position of genes and related distances between the adjacent genes is called gene mapping.

2m

13. Materials used to grow microorganism like spirulina:

* Waste water from potato processing plant

* Straw * molasses * Animal manure

* Sewage.

2m

14.	Difference somaclonal and gametoclonal variation	
	Somatic Variations found in plants regenerated invitro in leaf, stem, root, tuber etc.	* Gametophytic variations found in plants regenerated invitro gametic origin.
		2m

Section-III

III.	Answer any three questions: Qn. 19 is compulsory	3x3=9
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15.	Restriction enzymes:	
	* Restriction endonucleases	1m
	* Restriction exonucleases	
	* Restriction endonucleases Explanation	2m

16.	Characteristic features of Entomophilous flowers:	
	* Flowers are large, if aggregated into inflorescence if the flower is small.	(Any-3)
	* Flowers brightly coloured.	
	* Flowers scented and produce nectar.	
	* Pollen and nectar are floral rewards for visitors.	
	* Flowers produce foul odour to attract pollinators.	3m
	* In some flowers juicy cells are present which are sucked by insects.	

17.	Differences Linkage and crossing over	
	* Any 3 differences of linkage and crossing over.	3m

18.	Advantages of artificial seeds: (Any-3)	
	* Millions of artificial seeds can be produced at any time at low cost.	
	* Provide an easy method to produce genetically engineered plants with desirable traits.	3m
	* Easy to test genotype of plants.	
	* Artificial seeds produce identical plants	
	* Growth is faster with a shortened life cycle.	

19.	Incomplete dominance at molecular level:	
	* Wild type allele in 2 copies R^1R^1 → Functional enzyme → Red	1m
	* Mutant type allele R^2R^2 → Enzyme → No pigment → White colour	1m
	* F_1 intermediate R^1R^2 → 50% Functional protein → so it is pink	1m

Section - IV

IV. Answer the following in detail!

5x2=10

20.a) Dominant epistasis:

* It is a gene interaction in which two alleles of a gene at one locus interfere and suppress or mask the phenotypic expression of a different pair of alleles of another gene at another locus.

1m

* Epistatic gene * Hypostatic gene.

1m

* Flow chart, check board and ratio.

2m

* Explanation with example.

1m

20.b) Structure of an ovule:

* Integument - Explanation

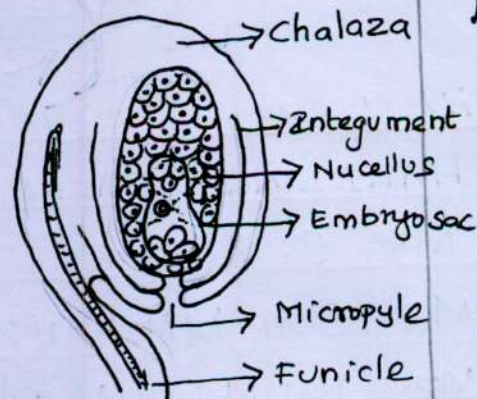
* Funicle - Explanation

* Hilum - Explanation

* Nucellus - Explanation

* Chalaza - Explanation

* Embryosac - Explanation



4m

1m

21.a) Steps involved in Recombinant DNA Technology:

* Isolation of DNA fragment - gene of interest.

1m

* Generation of r-DNA molecule using vector.

1m

* Selection of transformed host cells and allowing them to multiply the rDNA molecule.

1m

* Entire process generate large amount of rDNA molecule.

1m

* Diagram.

21.b) Basic Concepts of plant Tissue Culture:

Totipotency: The property of the live plant cells that they have the genetic potential when cultured in nutrient medium to give rise to a complete individual plant.

1m

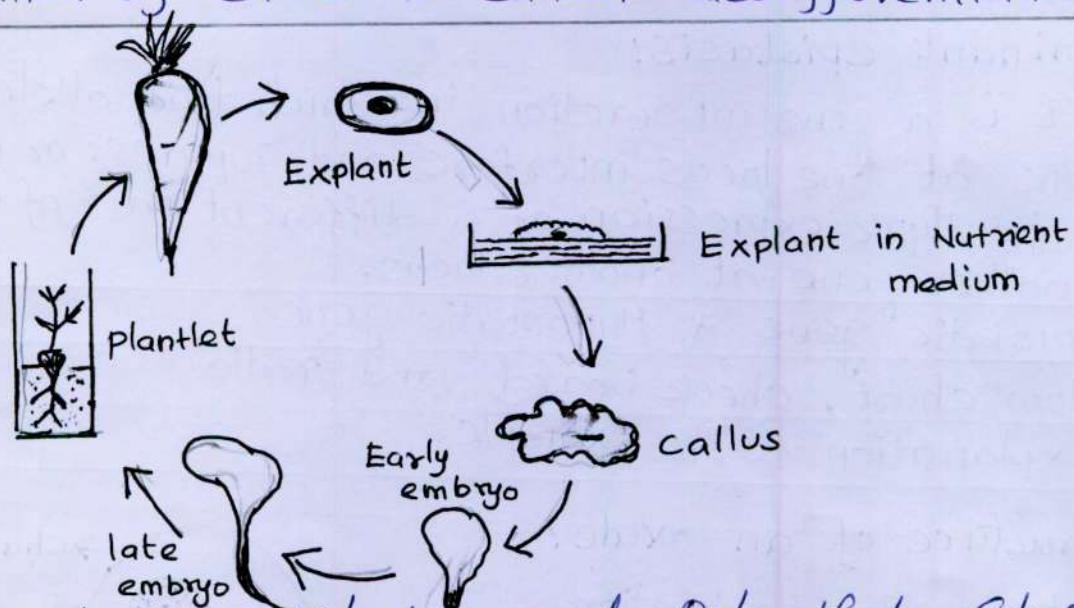
Differentiation: The process of biochemical and structural changes by which cells become specialized in form and function.

1m

Redifferentiation: Further differentiation of already differentiated cell into another type of cell.

1m

Dedifferentiation: The phenomenon of reversion of mature cells to the meristematic state leading to formation of callus is called dedifferentiation. 1m



ii) Dextran sulphate and Polyethylene Glycol 1m

HANDLING TEACHERS:

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