

Sethu Bhaskara Matric. Hr. Sec. School

Quarterly Examination Sep-2022

Class: 12 Botany (Long Version) Marks: 70

Answer Key

I. Choose the correct answer: (15x1=15)

Q.No	Answer	Marks
1.	c) 6	1
2.	b) 2 celled stage	1
3.	c) translator mechanism	1
4.	c) Crossing between F ₁ hybrid with their double recessive genotype.	1
5.	d) four	1
6.	b) 12:3:1	1
7.	c) two copies of three different genomes	1
8.	c) AUG	1
9.	d) 34 and 37	1
10.	c) GAATTC	1
11.	d) Agarose gel electrophoresis	1
12.	c) polygalacturonase	1
13.	MA	1
14.	d) Agar	1
15.	d) Quinine	1

II. Answer any 6 questions. Q.No: 24 is compulsory: (6x2=12)

16. Differentiate mellitophily and myrmecophily:

Mellitophily	Myrmecophily	
* Pollination by bees are called mellitophily	* Pollination by ants is called myrmecophily	(2 marks)
17. Any two post fertilization changes occurs in a flower:		
<p>1. sepals, petals, stamens Style and stigma - Usually wither and fall off</p> <p>2. ovary - fruit 3. Ovule - seed 4. Egg - zygote</p> <p>5. Funicle - stalk of the seed 6. Micropyle - Micropyle</p> <p>7. Nucellus - perisperm 8. outer integument - Testa</p> <p>9. Inner integument - tegmen (8. seed coat)</p> <p>(Any two) (2 marks)</p>		
18. Multiple alleles:		
<p>* Any of the three or more allelic forms of a gene occupy the same locus in a given pair of homologous chromosomes, they are said to be multiple alleles.</p> <p>(2 marks)</p>		
19. Reciprocal cross:		
<p>* When the parental types were reversed, the pollen from a tall plant was used to pollinate a dwarf pea plant which gave only tall plants.</p> <p>* The result was the same - All tall plants.</p> <p>Tall (♀) × Dwarf (♂) and Tall (♂) × Dwarf (♀) matings are done in both ways which are called Reciprocal Cross.</p> <p>(Any one point) (2 marks)</p>		
20. Co-mutagens. Give examples.		
<p>* The compounds which are not having own mutagenic properties but can enhance the effects known mutagens are called co-mutagens. 1 1/2</p> <p>* Example: Ascorbic acid increase the damage caused by hydrogen peroxide. 1/2</p> <p>Coffeine increase the toxicity of methotrexate.</p> <p>(Definition - 1 1/2, One example - 1/2) (2 marks)</p>		

21. Intercalary deletion - Diagram:



(2 marks)

22. Any two Disadvantages of Bt cotton:

- ★ Cost of Bt cotton seed is high
- ★ Effectiveness upto 120 days after that efficiency is reduced
- ★ Ineffective against sucking pests like jassids, aphids and whitefly
- ★ Affects pollinating insects and thus yield. (Any two points)

(2 marks)

23. Hardening:

- ★ Hardening is the gradual exposure of in vitro developed plantlets in humid chambers in diffused light for acclimatization so as to enable them to grow under normal field condition.

(2 marks)

24. Bioethics:

- ★ Bioethics refers to the study of ethical issues emerging from advances in biology and medicine.

(2 marks)

III Answer any 6 questions Q.No 33 is Compulsory. (6x3=18)

25. Short notes on pollen kit:

- ★ Pollen kit is contributed by the tapetum and coloured yellow or orange.
- ★ Chiefly made of carotenoids or flavonoids.
- ★ It is an oily layer forming a thick viscous coating over pollen surface.
- ★ It attracts insects and protects damage from UV radiation.

(3 marks)

26. Double fertilization and Triple fusion:
 * The two male gametes released from a male gametophyte are fertilize two different Components of the embryo sac.

* One of the male gamete fuses with the egg nucleus (syngamy) the second gamete fuses with the polar nuclei (triple fusion). Since both the male gametes are involved in fertilization, the phenomenon is called double fertilization.

* The second male gamete fuses with two polar nuclei, since this involves the fusion of three nuclei, this phenomenon is called triple fusion.

1/2

1/2

(3marks)

27. Differentiate Continuous and Discontinuous Variation:

Continuous Variation

Discontinuous Variation

* Most of the characters, exhibit a complete gradation from one extreme to the other without break.

* There are some characteristics which show a limited form of variation.

* Combined effects of many genes

* One or two major genes.

* These are the combining effects of environmental and genetic factors

* These are genetically determined by inheritance factors

* Quantitative inheritance

* Qualitative inheritance.

* Example: Human height and skin colour

* Example: Style length of primula, plant height of garden pea.

(Any three differences)

(3marks)

28. Atavism:

* It is a modification of a biological structures whereby an ancestral trait reappears after having been lost through reemergence of sexual reproduction in the flowering plant. Example: Hieracium pilosella.

(3marks)

<p>29. <u>Capping and Tailing:</u></p> <ul style="list-style-type: none"> * Modification at the 5' end of the primary RNA transcript (hnRNA) with methylguanosine triphosphate is called capping. * The 3' end of hnRNA is cleaved by an endonuclease and a string of adenine nucleotides is added to the 3' end of hnRNA tail polyadenylated called tailing. 	<p style="text-align: right;">⑤</p> <p style="text-align: right;">1½</p> <p style="text-align: right;">1½</p> <p style="text-align: right;">(3marks)</p>
<p>30. <u>Transposons:</u></p> <ul style="list-style-type: none"> * Transposons are the DNA sequence which can move from one position to another position in a genome (Mobile controlling element) 	<p style="text-align: right;">(3marks)</p>
<p>31. <u>Materials Used to grow Spirulina:</u></p> <ul style="list-style-type: none"> * Waste water from potato processing plants. * Straw, molasses, animal manure and even Sewage. 	<p style="text-align: right;">(3marks)</p>
<p>32. <u>Enzymes used to cut terminal end and internal phosphodiester bond of nucleotide sequence:</u></p> <ul style="list-style-type: none"> * <u>Exonuclease:</u> enzymes which remove nucleotides one at a time from the end of a DNA molecule eg: Bal 31, Exonuclease III * <u>Endonuclease:</u> Enzymes which break the internal phosphodiester bonds within a DNA molecule eg: Hind II, EcoRI, PvuI, BamHI, TaqI 	<p style="text-align: right;">1½</p> <p style="text-align: right;">1½</p> <p style="text-align: right;">(3marks)</p>
<p>33. <u>Applications of Plant tissue culture:</u></p> <p style="text-align: center;">(Any three applications)</p>	<p style="text-align: right;">(3marks)</p>
<p><u>IV Answer the questions:</u></p>	<p style="text-align: right;">(5×5=25)</p>
<p>34(a) <u>Characteris of anemophilous flowers:</u></p> <p style="text-align: center;">(Any Five Characteristic features)</p>	<p style="text-align: right;">(5 Marks)</p>

<p>(b) Endosperm, Types of endosperm:</p> <ol style="list-style-type: none"> 01. Endosperm - Definition 02. Types of Endosperms <ol style="list-style-type: none"> (i) Nuclear endosperm (ii) Cellular endosperm (iii) Helobial endosperm <p>(Explanation with diagrams and examples)</p>	<p>1</p> <p>4</p> <p>(5 Marks)</p>
<p>35(a) Inheritance of Chloroplast..</p> <ul style="list-style-type: none"> * Flow chart * Explanation. 	<p>2</p> <p>3</p> <p>(5 Marks)</p>
<p>(b) Incomplete dominance:</p> <ol style="list-style-type: none"> 1. Definition. 2. Explanation. 3. Checker board. 	<p>1</p> <p>2</p> <p>2</p> <p>(5 Marks)</p>
<p>36(a) Mechanism of Crossing Over:</p> <ul style="list-style-type: none"> * Synopsis * Cross over * Tetrad * Terminalisation. <p>Explanation.</p>	<p>(5 marks)</p>
<p>(b) DNA Transcription in Eukaryotes:</p> <ul style="list-style-type: none"> - Explanation. - Diagram. 	<p>4</p> <p>(5 marks)</p>
<p>37(a) Compare Various blotting Techniques:</p> <ul style="list-style-type: none"> * Southern blotting * Northern blotting * Western blotting <p>(Any five comparison)</p>	<p>(5 Marks)</p>

(b) Vectorless Genetransfer:

1. Chemical mediated
2. Micro injection
3. Electroporation
4. Liposome mediated
5. Biolistics.

1
1
1
1
1

(Explanation)

(5 marks)

38(a) Concepts of Plant tissue culture:

1. Totipotency
2. Differentiation.
3. Redifferentiation
4. Dedifferentiation.
5. Diagram

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(5 marks)

(b) Steps involved in Somatic hybridization.

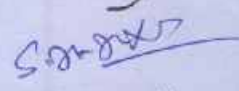
1. Definition.
2. Isolation of protoplast
3. Fusion of protoplast
4. Culture of protoplast
5. Diagram.

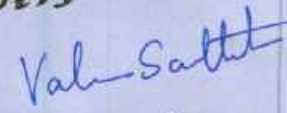
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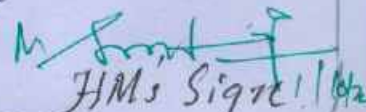
(5 Marks)

Handling Teachers


1. S. Robert


2. S.M. Mathan


3. Mrs. Valarecha


HMs Sigril