

Class : 12Register
Number**COMMON QUARTERLY EXAMINATION - 2024 - 25**

Time Allowed : 3.00 Hours]

BIOLOGY

[Max. Marks : 70

Part - I (Bio-Botany) (Marks : 35)

SECTION - I

Note. (i) Answer All the questions.

8×1=8

(ii) Choose the most appropriate answer from the given four alternatives and write the option code and corresponding answer.

- Which of the following represent megagametophyte.
 - Ovule
 - Embryo sac
 - Nucellus
 - Endosperm
- In his classic experiments on pea plants mendel did not use
 - Flowering position
 - Seed colour
 - Pod length
 - Seed shape
- Accurate mapping of genes can be done by three point test cross because increases
 - Possibility of single cross over
 - Possibility of double cross over
 - Possibility of multiple cross over
 - Possibility of recombination frequency
- Which one of the following palindromic base sequence in DNA can be easily cut at about the middle by some particular restriction enzymes.
 - 5'CGTTCG 3'-----3'ATCGTA 5'
 - 5'GATATG 3'-----3'CTACTA 5'
 - 5'GAATTC 3'-----3'CTTAAG 5'
 - 5'CACGTA 3'-----3'CTCAGT 5'
- Totipotency refers to
 - Capacity to generate genetically identical plants.
 - Capacity to generate a whole plant from any plant cell/expand
 - Capacity to generate hybrid protoplasts
 - Recovery of healthy plants from diseased the plants
- Which is the common type of oval found in Dicot and monocots?
 - Amphitropous
 - Campylotropous
 - Anatropous
 - Orthotropous
- Which of the following is not a Stop codon?
 - UAA
 - AUG
 - UGA
 - UAG
- Increasing speed of the degradation process by the addition of selected microbes is called
 - Composting
 - Bioaugmentation
 - Bio leaching
 - Phytoremediation

SECTION - II

Answer any four of the following questions.

4×2=8

- What is endothelium?
- Differentiate incomplete dominance and codominance.
- What is cell suspension culture?
- What is plasmogone?
- Define---Biopiracy.
- What is primary metabolism? Give an example.

SECTION - III

Answer any three of the following questions. Q.No 19 is compulsory

3×3=9

- Give an account on cryopreservation.
- What is meant by cytoplasmic inheritance.
- Write the salient features of Satton and Beveri concept.
- Which is known as the natural genetic engineer in plant? Why is it called so?
- Write about the gene transfer process through biolistics method.

SECTION - IV

Answer all the questions.

2×5=10

- What is tapetum ? write its Origin, types and functions
(OR)
 - How is Nicotiana exhibit self incompatibility explain its mechanism
- Mention the application of biotechnology.
(OR)
 - Explain the basic concepts involved in plant tissue culture.

V / 12 / Bio / 1

School Education - Villupuram district
Higher Secondary Second year – Quarterly Exam- 2024
Bio Botany – Key Answer

I. Answer All the questions**8 x 1=8**

Q. NO	Option	Part - I	Marks
1	b	Embryosac	1
2	c	Pod length	1
3	c	$2n + 1 + 1$	1
4	c	5'GAATTC3' -- 3'CTTAAG5'	1
5	b	Capacity to generate a whole plant from any plant cell /explant	1
6	c	Anatropous	1
7	b	AUG	1
8	b	Bio augmentation	1

II. Answer any Four questions.**4 x 2 = 8**

		Part - II																			
9.	Endothelium The inner most layer of the integument .Which is specialized to provide nutrition for growing embryo sac.		2																		
10.	<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>Effect one of the two alleles is more conspicuous</td> <td>Effects of both the alleles are equally conspicuous</td> </tr> <tr> <td>2</td> <td>The effect in hybrid is intermediate expression of the two alleles.</td> <td>Both the alleles are produces their effect independently.</td> </tr> <tr> <td>3</td> <td>In produces new phenotype</td> <td>Does not produce new phenotype</td> </tr> <tr> <td>4</td> <td>Qualitative approach of the gene expression</td> <td>Quantitative approach of the gene expression</td> </tr> <tr> <td>5</td> <td>Ex. Mirabilis jalapa.</td> <td>Ex .Red and white flowers of camellia</td> </tr> </tbody> </table> <p style="text-align: right;">(Any 2 difference)</p>	S.No	Incomplete Dominance	Co - Dominance	1	Effect one of the two alleles is more conspicuous	Effects of both the alleles are equally conspicuous	2	The effect in hybrid is intermediate expression of the two alleles.	Both the alleles are produces their effect independently.	3	In produces new phenotype	Does not produce new phenotype	4	Qualitative approach of the gene expression	Quantitative approach of the gene expression	5	Ex. Mirabilis jalapa.	Ex .Red and white flowers of camellia		2
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11.	Cell suspension culture The growing of single cells or small aggregates of cells in liquid medium.		2																		
12.	Plasmogene ➤ The gene which is present in the cytoplasmic organelles. ➤ It carry out cytoplasmic inheritance.		1 1																		
13.	Biopiracy The manipulation of intellectual property rights law by corporation without giving adequate recognition or remuneration to the original genetic resources possessors		2																		
14.	Primary metabolism Metabolites which are produced for the maintenance of life process by living organism. Example : Ethanol, citric acid, lactic acid (Any one)		1 1																		
		PART - III	3 x 3 = 9																		
15.	Cryopreservation 1. It is preservation process in which the biological materials like protoplast, cells, Tissue; organelles are preserved in low temperature. 2. The better known Cryopreservant liquid nitrogen, maintain at -196°C		2 1																		

16.	<p>Cytoplasmic inheritance</p> <ul style="list-style-type: none"> ➤ Some traits are controlled by chloroplast or mitochondrial gene. ➤ The gene which is present in cytoplasmic organelles are called plasmogene, which responsible cytoplasmic inheritance. 	2 1
17.	<p>Sutton and Beveri concept</p> <ol style="list-style-type: none"> 1. Somatic cells of organisms are derived from the zygote by mitosis. This consists of two identical sets of chromosomes. 2. One set is received from female parent and the other from male parent. This two chromosome constitute the homologous pair 3. Chromosomes retains their structural uniqueness and throughout the life cycle an organism. 4. Each chromosomes carries mendalian factor which are now termed as gene. 5. The behaviour of chromosomes during the gametes formation provides evidence to the fact that gene or factor located on chromosomes. <p style="text-align: right;">(Any three points)</p>	3
18.	<p>Natural genetic engineer</p> <ol style="list-style-type: none"> 1. Agrobacterium tumefaciens. 2. Agrobacterium tumifaciens has Ti Plasmid (Tumour inducing) and large size T DNA (transfer DNA). which have innate ability to transfer T DNA into plant genome via infection at wound site. 	1 2
19.	<p>Biolistics method</p> <ol style="list-style-type: none"> 1. The foreign DNA is coated onto the surface of minute gold or tungsten particle (1-3um) and bombarded onto the target cell (or) tissue. 2. The bombarded cells are cultured on selected medium to regenerate plants from the transformed cells. 	2 1
Part – IV		2 x 5=10
Answer all the questions		
20 (A).	<p>Tapetum - Origin, types and functions</p> <ol style="list-style-type: none"> i) Tapetum is the inner most wall of anther. ii) Which is partly derived from the peripheral wall layer and partly derived from the connection tissue. That is why; It is called dual in origin. <p>Function:</p> <ol style="list-style-type: none"> 1. It supplies nutrition to developing microspore 2. It contribute sporopollenin, which play important role in pollen wall formation 3. It produces pollen kit chemical materials 4. Rejection reaction proteins are produced by the tapetal cells <p style="text-align: right;">(Any three points)</p>	1 1 3
20. (B) (OR)	<p>Nicotiana - Self incompatibility</p> <ol style="list-style-type: none"> 1. The gene for self incompatibility is if represents as 'S'. Its allelic series are will be S1, S2, S3, S4 and S5. 2. The cross fertilizing tobacco plants were not always homozygous as S1 S2 or S2 S2 Its all plants are always heterozygous as S1 S2, S3 S4, S5 S6. 3. When crosses were made between seed parents with S1 S2 and S2 S3 though both are different kinds, pollen grain carrying S2 is not effective. 4. whereas when cross made between S1 S2 * S3 S4 all the pollens are effective 5. Likewise when cross made between S1 S2 and S1 S2 All pollen are in effective. <p style="text-align: center;">(OR)</p> <p style="text-align: center;">Diagram</p> <p style="text-align: center;">Tabulation</p>	5 x 1=5 2 3

21. (A)	Application of Biotechnology (Any five application)	5 x 1=5
21 (B) (OR)	Plant tissue culture concepts Title Explanation Totipotency, Differentiation, Redifferentiation Dedifferentiation	1 1 1 1 1

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QUARTERLY EXAM ANSWER KEY 2024

XII-BIOZOOLOGY

PART 1

MAXIMUM MARK 35

ANSWER ALL THE QUESTIONS

8X1=8

Q.NO	OPTION	ANSWER
1	D	(a-4), (b-3), (c-2), (d-1)
2	A	If both A and R are true and R is correct explanation for A
3	B	Leydig cell
4	A	Allantois
5	A	Inhibition of spermatogenesis.
6	B	A, B and AB
7	D	Replication, Transcription, Translation.
8	C	in water

PART II

ANSWER ANY 4 QUESTIONS

6X2=12

Q.NO	ANSWER	MARK
9	Unicellular organisms like Amoeba, Bacteria, Paramecium and Vorticella.	2
10	a) FSH- Follicle Stimulating Hormone. b) LH- Leutinsing Hormone. c) hCG- human Chorionic Gonadotropin. d) hPL- human Placenta Lactogen.	2
11	The method suggested is the micro-testicular sperm extraction, in which a small amount of testicular tissue in areas of active sperm production are removed and improved for sperm yield and used for fertilization of ovum. Intra-cytoplasmic sperm injection can also be done.	1 1
12	Trait is inherited from the male parent to his grandson through carrier daughter	2
13	The genetic code is universal. It means that all known living systems use nucleic acids and the same three base codons (triplet codon) direct the synthesis of protein from amino acids. Example: The mRNA (UUU) codon codes for phenylalanine in all cells of all organisms. Some exceptions are reported in prokaryotic, mitochondrial and chloroplast genome. However similarities are more common than differences.	1 1
14	It is characterized by severe mental retardation, defective development of the central nervous system, increased separation between the eyes, flattened nose, ears are malformed, mouth is constantly open and the tongue protrudes.	ANY 4 2

PART III

ANSWER ANY 6 QUESTIONS NO 19 IS COMPULSORY

3X3=9

Q.NO	ANSWER	MARK
15	The male and female gametes are produced by different parents and they fuse to form a zygote. So it is biparental. Example: Human-dioecious or unisexual animals	3
16	1. Testes are paired male sex organs lying in the scrotum, which hangs outside the abdominal cavity, because viable sperms cannot be produced at normal body temperature. 2. The scrotum is placed outside the abdominal cavity to create a temperature 2-3°C lower than the normal internal body temperature. 3. Thus the testes are placed in the scrotum, which acts as a thermo regulator for better spermatogenesis	1 1 1
17	Amniocentesis is a prenatal technique used to detect any chromosomal abnormalities in the foetus and it is being often misused to determine the sex of the foetus. Once the sex of the foetus is known, there may be a chance of female foeticide. Hence, a statutory ban on amniocentesis is imposed.	1.5 1.5
18	1. Heterogametic individuals (dissimilar sex chromosomes) 2. Produce two types of gametes, so they are called heterogamete. Example: In human males produce two kinds of sperms. Some with X chromosome and some with Y chromosome.	2 1
19	The genetic code is universal. It means that all known living systems use nucleic acids and the same three base codons (triplet codon) direct the synthesis of protein from amino acids. Example: The mRNA (UUU) codon codes for phenylalanine in all cells of all organisms. Some exceptions are reported in prokaryotic, mitochondrial and chloroplast genome. However similarities are more common than differences.	1 1 1

