QUARTERLY EXAMINATION - 2021

11th STD — BIOLOGY — MARK: 70

BIO - BOTANY - ANSWER KEY

I ANSWER ALL THE QUESTIONS 8×8 = 8

BB 1. (d) Methanobacterium.

BB 2. (d) Allamanda - Ternate Phyllotaxy

BB 3. (c) 42

BI 18 4. (a) pomology

BB 5. (c) Serotaxonomy

6. (b) rRNA
BB

7. (a) Anaphase
BB

8. (b) N-acetyl D
BB Glucosamine units.

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II Answer any four Questions: 4×2 = 8

9. Differentiate between aggregate fruit with multiple fruit. (Any two points)

Aggregate Fruit	Multiple Fruit
1. Aggregate fruits develop from a single flower with apocarpous pistil	Multiple fruits develop from the whole inflorescence along with peduncle.
2. Each free carpels are develops into a simple fruitlets	flowers fused together by succulent perianth.
3. A collection of simple fruitlets makes an Aggregate fruit.	Whole inflorescence forms a compact structure is called multiple fruit
4. Example: Annona polyalthia	Ex: Jack fruit, pine apple.

BI 10. Define - Eustele. P.41 2

The Stele is split into distinct collateral vascular bundles around the pith. Ex: Dicot stem.

BI 11. What are the types of Chromosome based on the position of Centromere? P.135 2

1. Meta centric (Centromere median) 2. Submeta Centric - (Centromere Subterminal)
3. Acro Centric (terminal centromere) 4. Telo Centric (terminal Centromere)

BI 12. Write a short note on Frankia ⇒ P.20 (Any two points) 2

(i) Frankia is a Symbiotic actinobacterium 1

(ii) Produces root nodules and fixes nitrogen in non-Leguminous plants. ex Alnus and Casuarina 1

(iii) They produces multi Cellular Sporangium.

Aa Actinomyces bovis grows in oral Cavities and Cause ... Lumpy Jaw

13 BB. Define Enzyme P-160 - 2

Enzymes are globular proteins that Catalyse the many thousands of metabolic reactions taking place within Cells and organism

14. BI. Write the Floral formula of Datura Metel P. 110

Floral Formula of Datura Metel - 2

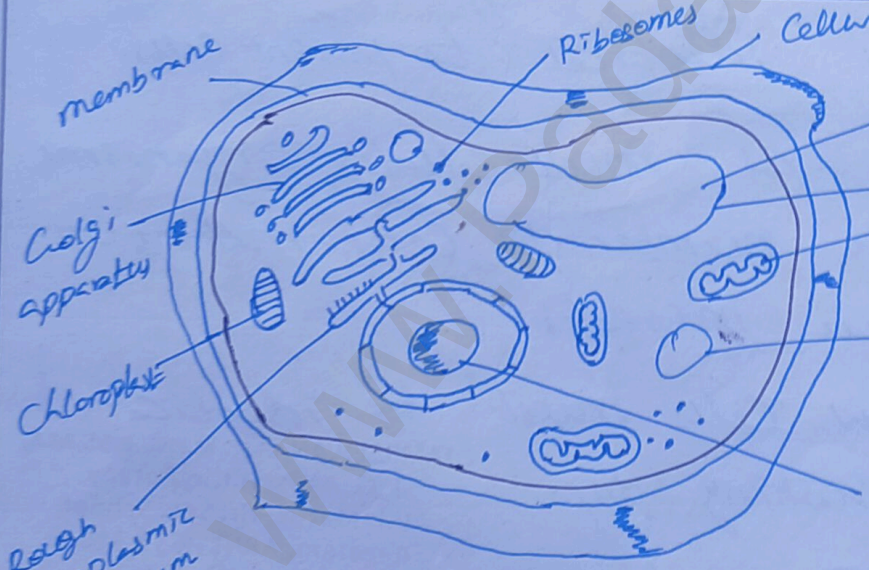
Br, Ebr, ⊕, ♀ $K_{(5)}$, $\widehat{C_{(5)}}$ A_5, $\underline{G}_{(2)}$

II) Answer any three Questions. Q.No 19 (Compulsory) 3×3=9

15 BB. Write the importance of Mycorrhizae. (ANY THREE POINT) P. 27

1. Helps to derive nutrition in Monotropa a Saprophytic angiosperm 1
2. Improves the availability of minerals and water to the plants 1
3. provides drought resistance to the plants
4. protects roots of higher plants from the attack of plant pathogens. 1

16 BB. Draw the diagram of plant cell and mark the parts. ANY THREE PARTS.



Plant Cell Structure 1

17 BB. Write the Differences between phylloclade and cladode.

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17.	Phyllo clade	Cladode 3
	1. It takes over all functions of Leaves. 1½ 2. Ex: Opuntia	It is like a phyllo clade but with one or two internodes. 1½ Ex: Asparagus.

BB-4 18 What is pollinium. Give example. P-74

pollen grains are fused together as a single mass Example : Calotropis. 1

BB 19 Write any three significance of mitosis P-145.

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1. Genetic stability : daughter cells are genetically identical to parent cells. 1
2. Growth - As multicellular organisms Grow, the number of cells making up their tissue increases.
3. The new cells must be identical to the existing ones. 1

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4. Asexual reproduction - Asexual reproduction results in offspring that are identical to the parent. Ex: yeast and Amoeba. 1
5. Regeneration: - Arms of Star fish.

5

ANSWER ALL THE QUESTIONS 2×5=10

IV
1.BBI

20.A. What are the steps involved in Gram Staining procedure ⇒P.13

1. Prepare a smear of bacterial culture
↓
2. Stain with crystal violet for 30 seconds.
↓
3. Rinse in distilled water for 2r seconds.
↓
4. Grams Iodine for 1minute.
↓
5. Rinse in distilled water.
↓
6. Wash in 95% ethanol or acetone for 10 to 20 seconds
↓
7 Rinse in distilled water
↓
8. Safranin for 30-60 seconds.
↓
9. Rinse in distilled water and blot.
↓
10. Observe under microscope.

(10 points) 10×½ = 5 MARK

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20 b. Write any five economic importance of family fabaceae — ANY 5 POINTS 5 MARK

S.No	Economic Importance	Binomial	Useful part	Uses
1.	Food plant	1. Lablab purpureus 2. sesbania grandiflora 3. Cyamopsis tetragonoloba	Tender Fruits Leaves Tender Fruits	vegetable Greens vegetable.
2.	pulses	1. Cajanus Cajan 2. Phaseolus vulgaris 3. Cicer arietinum. 4. vigna mungo 5. vigna radiata 6. vigna unguiculata 7 Glycine max 8. macrotyloma uniflorum.	Seeds.	Source of protein and starch of our food.
3.	oil plants	1. Arachis hypogea 2. pongamia pinnata	Seeds seeds.	oil extracted from seeds is edible and used for cooking Pongam oil has medicinal value and is used in the preparation of soap.
4.	Timber plants	1. Dalbergia latifolia 2. ptero Carpus Santalinus 3. p. marsupium	Timber	Timber is used for making Furniture Cabinet articles and as building materials.

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S.No	Economic Importance	Binomial	useful part	Uses.
5.	Medicinal plants	1. Crotalaria albida	Roots.	Used as purgative
		2. Psoralea Corylifolia	seeds.	used in leprosy and Leucoderma
		3. Glycyrrhiza glebra	Roots	Immuno modulater
		4. Mucuna pruriens	seeds	Neurological remedy.
6.	Fibre plants	1. Crotalaria juncea	Stem fibres	used for making ropes.
		2. Sesbania Sesban		
7.	pith plant	1. Aeschynomene aspera.	Stem pith	used for packing handicraft and fishing floats.
8.	Dye plants	1. Indifera tinctoria	Leaves	indigo dye obtained from Leaves is used to Colour printing and in paints.
		2. Clitoria ternatea	Flowers and seeds	Blue dye is obtained
		3. Butea monosperma	Flowers	Natural dye.

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21 a. Differentiate gymnosperms and angiosperms.

S No	Gymnosperms	Angiosperms
1.	vessels are absent	vessels are present
2.	phloem Lacks companion cells.	Companion cells are present
3.	Ovules are naked	Ovules are enclosed within the ovary.
4.	Wind pollination only	Insects, wind, water, animals etc, act as pollinating agents.
5.	Double fertilization is absent	Double fertilization is present.
6.	Endosperm is haploid	Endosperm is triploid.
7.	Fruit formation is absent	Fruit formation is present.
8.	flowers absent	flowers present.

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21 b. Describe the features of DNA.

Features of DNA.

1. If one strand runs in the 5'-3' direction the other runs in 3'-5' direction and thus are antiparallel. (they run in opposite direction)

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2. The angle at which the two strands pivot from the base pairs is about 120° for narrow angle between the strand generates a minor groove And 240° large angle on the other edge generates major groove.

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3. Each base is 0.34 nm apart and a complete turn of the helix comprises 3.4nm or 10 base pairs per turn in the predominant B form of DNA.

4. DNA helical structure has a diameter of 20A° and a pitch of about 34 A°. X-ray crystal study of DNA takes a stack of about 10A° to go completely around the helix (360°)

5. Thermodynamic stability of the helix and specificity of base pairing includes.

a) The hydrogen bonds between the complementary bases of the double helix

(ii) Stacking interaction between bases tend to stack about each other perpendicular to the direction of helical axis.
Electron cloud interactions ($\pi - \pi$) between the bases in the helical stacks contribute to the stability of the double helix.

6. The phosphodiester linkages gives an inherent polarity to the DNA helix.
They form strong covalent bonds, gives the strength and stability to the polynucleotide chain.

7. plectonemic coiling: - the two strands of DNA are wrapped around each other in a helix. making it impossible to simply move them apart without breaking the entire structure.

8. paranemic coiling: the two strands simply lie alongside one another, making them easier to pull apart.

9. Based on the helix and the distance between each turns, the DNA is of three forms - A DNA, B DNA, and Z DNA.

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QUARTERLY EXAMINATION - 2024

11 - STD | **BIOLOGY** | **BIO - BOTANY**

Time : 3.00 Hrs | Marks : 70

I **Answer all the question.** 8 X 1 = 8

1. Identify the Archaebacterium
   a) Acetobacter b) Erwinia c) Treponema d) Methanobacterium
2. Select the mismatch pair
   a) Musa - unicostate
   b) Lablab - trifolidate
   c) Acalypha - leaf mosaic
   d) Allamanda - ternate phyllotaxy
3. The haploid number of chromosome for an angiosperm is 14. The number of chromosome in its endosperm would be
   a) 7 b) 14 c) 42 d) 28
4. The study of fruits and their cultivation is called
   a) Pomology b) Embryology c) Phycology d) Mycology
5. The taxonomy which involves the similarities and dissimilarities among the immune system of different taxa is termed as
   a) Chemotaxonomy b) molecular systematics
   c) Serotaxonomy d) numerical taxonomy
6. Sequences of which of the following is used know the phylogeny
   a) mRNA b) rRNA c) tRNA d) HnRNA
7. Colchicine prevents the mitosis of the cells at which of the following stage.
   a) Anaphase b) Metaphase c) Prophase d) Interphase
8. Chitin is a linear polymer of ..... joined together by β - 1, 4 glycosidic linkages.
   a) β - D - glycose units b) N - acetyl D glucosamine units
   c) α - 1, 4, glucamalto hydrolase d) D - glycuronic acid

II **Answer any four questions.** 4 X 2 = 8

9. Differentiate between aggregate fruit with multiple fruit.
10. Define - Eustele.
11. What are the types of chromosome based on the position of centromere?
12. Write short note on Frankia.
13. Define Enzyme.
14. Write the floral formula of Datura Metal.

III **Answer any three questions. Question no 19 is compulsory.** 3 X 3 = 9

15. Write the importance of mycorrhizae.
16. Draw the diagram of plant cell and mark the parts.
17. Write the differences between phylloclade and cladode.
18. What is Pollinium. Give example.
19. Write any three significance of mitosis.

IV **Answer all the questions.** 2 X 5 = 10

20. a) What are the steps involved in gram staining procedure.? ***(OR)***
    b) Write any five economics importance of family Fabaceae.
21. a) Differentiate gymnosperms and angiosperms. ***(OR)***
    b) Describe the features of DNA.