

**CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION
APRIL 2012**

**BOTANY - IV
CELL BIOLOGY, HISTOLOGY, DEVELOPMENTAL BIOLOGY**

Time: 3 Hrs

Max. Marks: 80

Instructions:

- 1. Answer both Part A & Part B.**
- 2. Answer TWO full questions from each unit.**
- 3. All questions in Part B carry equal marks.**
- 4. Draw diagrams wherever necessary.**

PART – A

1. Answer **any TEN** of the following. **2x10=20**
- a) Write any two functions of a cell wall.
 - b) Name the types of proteins present in the plasma membrane.
 - c) List the three parts of a Golgi apparatus.
 - d) Define metacentric and telocentric chromosome.
 - e) What are lateral meristems? Give one example.
 - f) Name the stages of mitosis.
 - g) Write any two functions of collenchyma.
 - h) Draw a labelled diagram of a dicot stoma.
 - i) What are lenticels?
 - j) Differentiate between chalazogamy and porogamy.
 - k) Write any one test to determine pollen viability.
 - l) What is dichogyny?

**PART – B
UNIT – I**

- Answer **any TWO** of the following. **10x2=20**
2.
 - a) Describe the structure and function of a chloroplast with a diagram. **05**
 - b) What are telomeres and satellite bodies? Mention their significance. **2½**
 - c) Write any five functions of Endoplasmic reticulum. **2½**
 3.
 - a) Explain the nucleosome and solenoid model of a chromosome. **05**
 - b) Write a note on structure of a ribosome. **2½**
 - c) Write the structure and importance of nucleolus. **2½**
 4.
 - a) Give a detailed account of non-living inclusions of a cell. **05**
 - b) What are termed as suicide bags? List its components. **2½**
 - c) What are microtubules? Write a note on their importance. **2½**

UNIT – II

- Answer **any TWO** of the following. **10x2=20**

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|----|----|--|-----------|
| 5. | a) | Explain the process of meiosis I with suitable diagrams. | 05 |
| | b) | Give an account of Tunica Corpus Theory. | 2½ |
| | c) | Mention any two types of Parenchyma & give their functions. | 2½ |
| 6. | a) | Describe the structure and function of any one complex permanent tissue. | 05 |
| | b) | Write short notes on cell cycle. | 2½ |
| | c) | Explain the origin of lateral roots. | 2½ |
| 7. | a) | Give a detailed account of epidermal tissue system. | 05 |
| | b) | Write short notes on significance of mitosis & meiosis. | 2½ |
| | c) | What are sclereids? List their types. | 2½ |

UNIT – III

Answer **any TWO** of the following.

10x2=20

- | | | | |
|-----|----|---|-----------|
| 8. | a) | Give a brief account of microsporogenesis and development of male gametophyte in Angiosperms. | 05 |
| | b) | Write a note on double fertilization and triple fusion. | 2½ |
| | c) | Write a brief note on annual rings. | 2½ |
| 9. | a) | Explain the different types of endosperm formation in Angiosperms. | 05 |
| | b) | List any five agents of pollination. | 2½ |
| | c) | What are laticiferous tissues? Mention the types. | 2½ |
| 10. | a) | Explain the stelar secondary growth in a dicot root. | 05 |
| | b) | With a labelled diagram, explain the morphology of a pollen grain. | 2½ |
| | c) | Write short notes on Scutellum, coleorhiza and coleoptile. | 2½ |

BOT 401

Reg. No.

CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION

APRIL 2013

BOTANY - IV

CELL BIOLOGY, HISTOLOGY, DEVELOPMENTAL BIOLOGY

Time: 3 Hrs

Max. Marks: 80

Instructions:

- 1. Answer both Part A & Part B.**
- 2. Answer TWO full questions from each unit.**
- 3. All questions in Part B carry equal marks.**
- 4. Draw diagrams wherever necessary.**

PART – A

1. Answer **any TEN** of the following. **2x10=20**
- a) State any two functions of cellwall.
 - b) What is telomere? Mention its significance.
 - c) Name the components of Nucleosome.
 - d) Why meiosis is called so? Name the stage at which reduction in the chromosome number occurs.
 - e) State the law of purity of gametes.
 - f) Name any four types of xylem vessels.
 - g) What is epistasis?
 - h) Name the following: a) conducting element of phloem
b) living enucleate plant cell
 - i) What is vascular cambium? Mention its components.
 - j) What is eleistogamy? Give an example.
 - k) Define anemophily. Write any two features of anemophilous flowers.
 - l) What is campylotropous ovule? Give an example.

PART – B

UNIT – I

Answer **any TWO** of the following. **10x2=20**

2. a) Explain the Fluid-Mosaic model of plasma membrane. State any two functions of plasma membrane. **05**
- b) Write a note on Pachytene stage. **03**
- c) Write a note on nucleolus. **02**
3. a) Explain the phenomenon of linkage. **05**
- b) Write a note on thylakoids. **03**
- c) Write a note on Diakinesis. **02**
4. a) Explain the ultrastructure of Mitochondrion. **05**
- b) Draw neat labeled diagram of metaphase chromosome. **03**
- c) Comment on Linkage map. **02**

UNIT – II

Answer **any TWO** of the following. **10x2=20**

5. a) Explain how genes for seed shape and seed colour are inherited in Garden Pea. Derive the F₂ phenotypic ratio. **05**
- b) Write a note on Histogen theory. **03**
- c) Write a note on companion cells. **02**

- | | | | |
|----|----|---|-----------|
| 6. | a) | Explain the interaction of duplicate factors. | 05 |
| | b) | Write a note on later vessels. | 03 |
| | c) | Write a note on trichomes. | 02 |
| 7. | a) | Explain the structure distribution and function of Collenchyma. | 05 |
| | b) | Write a note on inheritance of flower colour in <i>Mirabilis julapa</i> . | 03 |
| | c) | Write a note on lateral meristems. | 02 |

UNIT – III

Answer **any TWO** of the following.

10x2=20

- | | | | |
|-----|----|---|-----------|
| 8. | a) | Explain the process of Megasporogenesis. Add a note on the structure of female gametophyte. | 05 |
| | b) | Write a note on vascular bundles of roots. | 03 |
| | c) | Define Heterostyly and Herkogamy. | 02 |
| 9. | a) | Explain the development of dicot embryo. | 05 |
| | b) | Write a note on Periderm. | 03 |
| | c) | Write short note on Pollen structure. | 02 |
| 10. | a) | Explain the anatomy of monocot stem. | 05 |
| | b) | Write a note on Helobian endosperm. | 03 |
| | c) | Write a note on male gametophyte of Angiosperms. | 02 |

CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2014

BOTANY

CELL BIOLOGY, GENETICS, ANATOMY & EMBRYOLOGY

Time: 3 Hrs

Max. Marks: 80

Instructions:

- 1. Answer both Part A & Part B.**
- 2. Answer two full questions from each unit.**
- 3. All questions in Part B carry equal marks.**
- 4. Draw diagrams wherever necessary.**

PART – A

1. Answer **any TEN** of the following. **10x2=20**
- What is unit membrane? Give an example.
 - What is chiasma frequency?
 - What are monosomes and polysomes?
 - Name the different stages of prophase I.
 - What are cystoliths? Where it is found?
 - State the law of segregation of factors.
 - Distinguish between primary and secondary meristems?
 - What are laticifers? Mention their types.
 - Give technical terms for cork and cork cambium.
 - What is helobial endosperm?
 - Give any two anatomical differences between dicot and monocot roots.
 - What is double fertilization and triple fusion?

PART – B

UNIT – I

- Answer **any TWO** of the following. **10x2=20**
- Explain the ultrastructure of cellwall. **5**
 - Write a note on cytokinesis. **3**
 - What are the functions of Endoplasmic reticulum? **2**
 - Explain the nucleosome model of chromosome. **5**
 - Write a note on mitotic spindle apparatus. **3**
 - List significance of mitosis. **2**
 - Describe the structure and functions of Mitochondrion. **5**
 - Explain briefly linkage mapping. **3**
 - What is a bordered pit? **2**

UNIT – II

Answer **any TWO** of the following.

10x2=20

5. a) Describe the dominant epistasis with a plant example. **5**
b) Classify parenchyma tissue based on the function and explain the types. **3**
c) Mention any two differences between vessels and tracheids. **2**
6. a) State Mendel's second law, explain with an example. **5**
b) Write a note on collenchyma tissue. **3**
c) Differentiate between test cross and backcross. **2**
7. a) Explain Tunica-cornu and Histogen theory. **5**
b) What are Trichomes? Explain any three types. **3**
c) What are bast fibres? **2**

UNIT – III

Answer **any TWO** of the following.

10x2=20

8. a) Describe the process of secondary growth in stem region of dicot stem. **5**
b) Explain any two types of contrivances for cross pollination. **3**
c) Write short note on pollen viability. **2**
9. a) Draw a neat labeled diagram of mature Anther T.S. **5**
b) Explain polygonum type of embryo sac. **3**
c) Give any two salient characters of animal-pollinated pollen grains. **2**
10. a) Describe the process of monocot embryo development with example you have studied. **5**
b) Draw a neat labeled diagram of an anatropous ovule. **3**
c) What is cellular endosperm? **2**

CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2015

BOTANY

PAPER IV - CELL BIOLOGY; GENETICS, ANATOMY AND EMBRYOLOGY

Time: 3 Hrs

Max. Marks: 80

Instructions:

- 1. Answer both Part A & Part B.**
- 2. Answer two full questions from each unit.**
- 3. All questions in Part B carry equal marks.**
- 4. Draw diagrams wherever necessary.**

PART – A

1. Answer **any TEN** of the following: **10x2=20**
- Recessive back cross is a test cross. Give reasons.
 - What are Colpi? State its importance.
 - Define dominant epistasis, giving an example with F_2 ratio.
 - Write any two important features and two functions of collenchyma.
 - What are ergastic substances? Give two examples.
 - What is homogamy? State the disadvantages.
 - Write the functions of matrix in Chloroplastids.
 - Define double fertilization. Mention its importance.
 - Internodes of monocot stem are generally longer. Give reasons.
 - Name the types of chemical substances in the cell wall.
 - What is a Chiropterophilous flower? Give any two important features.
 - Write the functions of Golgi bodies in plants.

PART – B

UNIT – I

Answer **any TWO** of the following: **2x10=20**

- Explain the type of linkage in plants with a suitable example. **5**
 - Write a note on nucleosome model **3**
 - Give the functions of smooth ER. **2**
- Write the ultrastructure of mitochondrion. Add a note on its functions **5**
 - Write a note on types of Lysosomes **3**
 - State the functions of centromere **2**
- Write the salient features of stages of Prophase.1 **5**
 - Draw a labeled diagram of fluid mosaic model of plasma membrane. **3**
 - Mention any four important features of Nucleus. **2**

UNIT – II

Answer **any TWO** of the following:

2x10=20

5. a) Comment on 1) Incomplete dominance
2) Laticiferous tissue **5**
b) Write a note on types of parenchyma. **3**
c) State the second law of heredity. **2**
6. a) Give the schematic representation of polygenic inheritance in plants. **5**
b) Write the features of Sieve tubes. **3**
c) Differentiate between histogen & Tunica-Corpus theories. **2**
7. a) Write a brief note on
1) Trachaea 2) Types of Sclereids **5**
b) Differentiate between complementary and supplementary gene interactions. **3**
c) What are Trichomes? Mention the functions. **2**

UNIT – III

Answer **any TWO** of the following:

2x10=20

8. a) Explain annual rings with suitable diagrams. **5**
b) Write a note on any two contrivances for cross pollination. **3**
c) Mention the features of helobial type of endosperm. **2**
9. a) Explain the Monosporic development of embryo sac. **5**
b) List out the features of anemophilous flowers. **3**
c) Draw a labelled diagram of V.S. of lenticel. **2**
10. a) Draw a neat labeled diagram of T.S of primary structure of dicot root. **5**
b) Write the features of T.S of mature anther. **3**
c) Give any four differences between dicot and monocot stem anatomy . **2**

CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2016**BOTANY****CELL BIOLOGY, GENETICS, ANATOMY AND EMBRYOLOGY**

Time: 3 Hrs

Max. Marks: 80

Instructions:

1. Answer both Part A & Part B.
2. Answer two full questions from each unit.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

PART – A

1. Answer any **TEN** of the following. 10x2=20
- a) What are the functions of matrix of chloroplastid?
 - b) Differentiate between Raphides and cystoliths.
 - c) State any two significances of mitosis.
 - d) What are lysosomes? Mention the types.
 - e) Mention the characteristics of a mature sieve tube.
 - f) What are complementary factors? What is the ratio obtained?
 - g) What are lateral roots? How do they originate.
 - h) Mention types of stomata with examples
 - i) What is pollen kit? Give its function.
 - j) What is Chalazogamy?
 - k) Write two important features of ornithophilous flowers.
 - l) What are lenticels? Mention their functions.

PART – B**UNIT – I**

- Answer any **TWO** of the following. 2x10=20
2.
 - a) Highlight the events occurring during Prophase I. 5
 - b) Write a note on ribosomes. 3
 - c) State any two functions of Golgi complex. 2

 3.
 - a) Explain the structure of metaphase chromosome. 5
 - b) What are the functions of plasma membrane? 3
 - c) Write a note on Racker's particles. 2

 4.
 - a) Explain the structure of Nucleus. 5
 - b) Write short note on starch grains. 3
 - c) What is linkage? Mention its significance. 2

UNIT – II

Answer **any TWO** of the following. 2x10=20

- | | | | |
|----|----|---|---|
| 5. | a) | Explain water conducting tissue in plants. | 5 |
| | b) | What is polygenic inheritance? Give an example with applications. | 3 |
| | c) | Write a note on Glandular tissues. | 2 |
| 6. | a) | Explain the supplementary gene interaction. | 5 |
| | b) | Differentiate between latex cells and latex vessels. | 3 |
| | c) | Comment on intercalary meristem. | 2 |
| 7. | a) | Explain the structure and functions of Sclerenchyma tissue. | 5 |
| | b) | Write a note on test cross. | 3 |
| | c) | Write a note on Tunica-Corpus theory. | 2 |

UNIT – III

Answer **any TWO** of the following. 2x10=20

- | | | | |
|-----|----|---|---|
| 8. | a) | Explain the structure of anatropous ovule. | 5 |
| | b) | Briefly explain the structure of anther wall. | 3 |
| | c) | Differentiate between heart wood and sap wood. | 2 |
| 9. | a) | Explain the contrivances of cross Pollination. | 5 |
| | b) | Write a note on double fertilization. | 3 |
| | c) | Comment on Vascular rays. | 2 |
| 10. | a) | Explain the anatomy of monocot root with a labelled sketch. | 5 |
| | b) | What is endosperm? Explain any one type. | 3 |
| | c) | Differentiate between dicot and monocot embryo. | 2 |

CREDIT BASED FOURTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2016

BOTANY

CELL BIOLOGY, GENETICS, ANATOMY & EMBRYOLOGY

Time: 3 Hrs

Max. Marks: 80

Instructions:

1. Answer both Part A & Part B.
2. Answer two full questions from each unit.
3. All questions in Part B carry equal marks.
4. Draw diagrams wherever necessary.

PART – A

1. Answer **any TEN** of the following. 10x2=20
- a) What are Intrinsic and Extrinsic proteins?
 - b) List any four functions of cell wall.
 - c) Why are lysosomes called suicide bags?
 - d) Define coupling and repulsion
 - e) State the law of independent assortment of genes.
 - f) Mention the different types of thickening on walls of trachea and tracheids.
 - g) What are the functions of aerenchyma and chlorenchyma?
 - h) Mention the chemical nature and functions of cuticle.
 - i) Mention the functions of ray initials and fusiform initials.
 - j) Mention the different wall layers of the anther.
 - k) What is meant by double fertilization?
 - l) Differentiate between albuminous and exalbuminous seeds.

PART – B**UNIT – I**

- Answer **any TWO** of the following. 2x10=20
2. a) Explain the ultra structure of a chloroplast with a diagram. Add a note on its functions. 6
 - b) Explain the nucleosome model of chromosome. 4
 3. a) Describe metaphase chromosomes with a labelled diagram. 6
 - b) Give an account of structure and functions of ribosomes. 4
 4. a) Describe the process of mitosis and its significance. 6
 - b) Describe the mineral crystals found in plant cells. 4

UNIT – II

Answer **any TWO** of the following.

2x10=20

- | | | | |
|----|----|---|---|
| 5. | a) | Explain recessive epistasis with a suitable plant example. | 6 |
| | b) | What are meristems? Explain their characters and mention the types. | 4 |
| 6. | a) | Give an account of food conducting tissue in plants. | 6 |
| | b) | Write a note on sclereids and their functions. | 4 |
| 7. | a) | Explain Polygenic inheritance with a suitable plant example. | 6 |
| | b) | Write a short note on (i) Tunica corpus theory (ii) lateral roots. | 4 |

UNIT – III

Answer **any TWO** of the following.

2x10=20

- | | | | |
|-----|----|---|---|
| 8. | a) | Explain the extrastelar secondary growth in dicot stem. | 6 |
| | b) | What are the characteristic features of anemophilous flowers. | 4 |
| 9. | a) | Explain megasporogenesis in angiospermic plants. | 6 |
| | b) | Explain the structure of monocot embryo. | 4 |
| 10. | a) | Explain the different types of endosperms. | 6 |
| | b) | Differentiate between dicot and monocot stem anatomy. | 4 |
