

Roll No. \_\_\_\_\_

**PGIIS- N- 1539 B-18**  
**M.Sc. III Semester Degree Examination**  
**BOTANY**  
**(Genetics, Cell and Molecular Biology)**  
**Paper - HCT 3.1**  
**(New)**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to candidates:***

1. Answer any **five** questions.
2. **Question No.1** is compulsory.

1. Answer in **one or two** sentences

**(10×2=20)**

- a) Dosage compensation.
- b) Hardy. Weinberg's law.
- c) Gene families.
- d) DNA methylation.
- e) Ribosome.
- f) Genetic code.
- g) Gene silencing.
- h) Translation inhibitors.
- i) C D K .
- j) Oncogenes

**(4×15=60)**

2. Describe in detail the different mechanisms of sex determination in plants. **(15)**
3. Write an account on the different mechanisms for DNA repair in prokaryotes and Eukaryotes. **(15)**
4. What are chaperons? Add a note on their role in protein folding. **(15)**
5. Explain in detail the regulation of gene expression in bacteriophage. **(15)**
6. Write short notes on any **three** of the following:
  - a) AC/DS system in maize.
  - b) Enzymes involved in DNA replication.
  - c) Viral oncogenes.
  - d) Translational proof reading. **(15)**



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**Time : 3 Hours**

**Maximum Marks : 80**

**Instructions to Candidates:**

1. Answer any five questions.
2. Questions No.1 is compulsory.

1. Answer in one or two sentences: (10×2=20)
  - a) Lethal genes
  - b) Gene pool
  - c) Gene therapy
  - d) Microtubules
  - e) Nuclear pore complex
  - f) Kinetochore
  - g) Heterochromatin
  - h) Exons
  - i) Nirenberg
  - j) Ribozyme
2. Write an account on the cytoplasmic male sterility in higher plants with examples. (4×15=60)
3. Discuss briefly the biogenesis of mitochondria and chloroplast. (15)
4. Write an account on the cytological and molecular basis of crossing over. (15)
5. Discuss the central dogma of molecular biology and add its significance. (15)
6. Write short notes on any **Three** of the following. (3×5=15)
  - a) Human genome project
  - b) Enzymes of DNA replication
  - c) Nucleosome model
  - d) Acquired immunity.



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**PGIIS-N-1540 B-18**  
**M.Sc. III Semester Degree Examination**  
**BOTANY**  
**Plant Physiology and Metabolism**  
**Paper - HCT 3.2**  
**(New)**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

- 1) Answer any **five** questions.
- 2) **Question No. 1** is compulsory.

1. Answer in **one or two** sentences. **(10×2=20)**
  - a) Nitrogenase.
  - b) Abscisic acid.
  - c) Polysaccharides
  - d) Saturated fatty acids.
  - e) Hup gene.
  - f) Hatch-slack cycle.
  - g) Photorespiration.
  - h) Pentose sugars.
  - i) Biotic stress.
  - j) Rubp case.
2. Explain passive transport across the membrane in plants. **(15)**
3. Explain different methods of purification of enzymes. **(15)**
4. Describe Kreb's cycle and add a note on its significance. **(15)**
5. Give an account of the commercial applications of the growth hormones. **(15)**
6. Write short notes on any **three** of the following: **(3×5=15)**
  - a) Glyoxylate cycle.
  - b) Electron transport chain.
  - c) Biosynthesis of ethylene.
  - d) Phytochromes.

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**PGIIS-O 1540 B-18**  
**M.Sc. III Semester Degree Examination**  
**BOTANY**  
**(Plant Physiology and Metabolism)**  
**Paper - HCT 3.2**  
**(Old)**

**Time : 3 Hours**

**Maximum Marks : 80**

**Instructions to Candidates:**

1. Answer any five questions.
2. Questions No.1 is compulsory.

1. Answer in one or two sentences:

(10×2=20)

- a) Zwitter ion.
- b) Monosaccharide
- c)  $\alpha$ -Oxidation
- d) Endomembrane
- e) Auxins
- f) Nitrogenase
- g) Hup genes
- h) Emerson enhancement effect
- i) Photolysis of water
- j) Phytochromes

(4×15=60)

2. Write an account of extraction and purification of enzymes.

(15)

3. Differentiate between C<sub>3</sub> and C<sub>4</sub> cycle of carbon fixation.

(15)

4. Describe mechanism of transport of molecules across membranes.

(15)

5. Describe the biosynthesis and physiological effects of abscisic acid in plants.

(15)

6. Write short notes on any Three of the following.

(3×5=15)

- a) Ultrastructure of Mitochondria
- b) CAM plants
- c) Respiratory Quotient
- d) Drought stress

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**PGIIS-N-1541 B-18**  
**M.Sc. III - Semester Degree Examination**  
**BOTANY**  
**(Genetic Engineering)**  
**Paper - SCT 3.3.1**  
**(New)**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to Candidates:***

1. Answer any **five** questions.
2. **Q.No.1** is compulsory.

1. Answer in **one or two** sentences :

**(2×10=20)**

- a) ECORI
- b) pBR 322
- c) Cosmid
- d) Micro - injection
- e) Reporter genes
- f) Bt - Brinjal
- g) Liposome
- h) Ethylmethane sulfonate
- i) Anchord PCR
- j) ISSR

2. Explain the methods of *Agrobacterium* mediated genetic transformation. **(15)**

3. Explain the techniques and applications of Amplified fragment length polymorphism. **(15)**

4. Explain the basis of induced mutation and their role in evolution. **(15)**

5. Give an account of gene cloning vectors. **(15)**

6. Write short notes on any **three** of the following : **(3×5=15)**

- a) Reverse transcriptase
- b) Southern blotting
- c) Transposable elements
- d) Applications of PCR.

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**BOTANY**  
**(Genetic Engineering)**  
**Paper - SCT 3.3.1**  
**(Old)**

**Time : 3 Hours**

**Maximum Marks : 80**

***Instructions to candidates:***

1. Answer any five questions.
2. Question No.1 is compulsory.

1. Answer in **one or two** sentences.

**(10×2=20)**

- a) Restriction enzymes.
- b) Klenow fragment.
- c) Cosmid.
- d) C-DNA library.
- e) Insertion.
- f) Mutation.
- g) Inverse PCR
- h) AFLP.
- i) Microinjection.
- j) Gus

**(4×15=60)**

2. Explain the functional variations between plasmid and vector.

**(15)**

3. Explain the three step Principle of PCR.

**(15)**

4. Describe the Mutation and its role in evaluation.

**(15)**

5. Give an account of gene transfer method through Agrobacterium.

**(15)**

6. Write short notes on any **three** of the following:

**(3×5=15)**

- a) Western blot.
- b) Transposable elements.
- c) Micro projectile bombardment.
- d) Cowpea Trypsin inhibitor.