

**M.Sc. MOLECULAR VIROLOGY DEGREE EXAMINATION****SECOND YEAR****(For candidates admitted from 2009-2010 onwards)****PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY****Q.P. Code: 289130****Time : Three Hours****Maximum : 100 marks****(180 Min.)****Answer ALL questions in the same order.****I. Elaborate on:**

|  | <b>Pages<br/>(Max.)</b> | <b>Time<br/>(Max.)</b> | <b>Marks<br/>(Max.)</b> |
|--|-------------------------|------------------------|-------------------------|
|--|-------------------------|------------------------|-------------------------|

- |                                                                                                                 |    |         |    |
|-----------------------------------------------------------------------------------------------------------------|----|---------|----|
| 1. Enumerate advanced molecular techniques. Write in detail about sequencing, methodology and its applications. | 17 | 40 min. | 20 |
| 2. Classify anti-viral drugs. Discuss the mechanism of action and drug-resistance of anti-retroviral-drugs.     | 17 | 40 min. | 20 |

**II. Write notes on:**

- |                                                                       |   |         |   |
|-----------------------------------------------------------------------|---|---------|---|
| 1. AgM capture ELISA.                                                 | 4 | 10 min. | 6 |
| 2. Ribozymes.                                                         | 4 | 10 min. | 6 |
| 3. Interferons.                                                       | 4 | 10 min. | 6 |
| 4. Immune-modulators.                                                 | 4 | 10 min. | 6 |
| 5. Western-blot.                                                      | 4 | 10 min. | 6 |
| 6. Antigen capture ELISA and Immune-florescence.                      | 4 | 10 min. | 6 |
| 7. Adjuvants.                                                         | 4 | 10 min. | 6 |
| 8. Viruses associated with Haemorrhagic fevers and their – diagnosis. | 4 | 10 min. | 6 |
| 9. Micro-assays.                                                      | 4 | 10 min. | 6 |
| 10. DNA-Vaccines.                                                     | 4 | 10 min. | 6 |

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(180 Min.)****Maximum : 100 marks****Answer ALL questions in the same order.****I. Elaborate on:****Pages Time Marks  
(Max.) (Max.) (Max.)**

- |                                                          |    |         |    |
|----------------------------------------------------------|----|---------|----|
| 1. Recombinant and Synthetic vaccines.                   | 17 | 40 min. | 20 |
| 2. Advanced Molecular Techniques in diagnostic virology. | 17 | 40 min. | 20 |

**II. Write Notes on:**

- |                                                                     |   |         |   |
|---------------------------------------------------------------------|---|---------|---|
| 1. Structured file formats.                                         | 4 | 10 min. | 6 |
| 2. Secondary structure Prediction from Multiple sequence alignment. | 4 | 10 min. | 6 |
| 3. Application of Nano technology.                                  | 4 | 10 min. | 6 |
| 4. Functional gene arrays.                                          | 4 | 10 min. | 6 |
| 5. Cytokines.                                                       | 4 | 10 min. | 6 |
| 6. Gene prediction methods.                                         | 4 | 10 min. | 6 |
| 7. Adjuvants.                                                       | 4 | 10 min. | 6 |
| 8. Si RNA.                                                          | 4 | 10 min. | 6 |
| 9. Acyclovir.                                                       | 4 | 10 min. | 6 |
| 10. Anti retro viral chemo therapy.                                 | 4 | 10 min. | 6 |

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[LF 1014]

OCTOBER 2014

Sub. Code: 9130

**M.Sc. MOLECULAR VIROLOGY DEGREE EXAMINATION**

**SECOND YEAR**

**(For candidates admitted from 2009-2010 onwards)**

**PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code: 289130***

**Time : Three Hours**

**Maximum : 100 marks**

**Answer ALL questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. VIRAL VACCINES.
2. Molecular interactions on Micro arrays.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Phylogenetic analysis.
2. Protein sequence databases.
3. Interferons.
4. Ribozymes.
5. BLAST.
6. Antisense RNA.
7. RFLP.
8. MLST.
9. Viral targets for antiviral agents.
10. Protease Inhibitors.

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[LH 0415]

OCTOBER 2015

Sub. Code: 9130

**M.Sc., MOLECULAR VIROLOGY**  
(for Candidates admitted from 2009-2010 Batch onwards)  
**SECOND YEAR**  
**PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

*Q.P. Code : 289130*

**Time : Three hours**

**Maximum : 100 marks**

**I. Elaborate on :**

**(2 x 20 = 40)**

1. Molecular Taxonomy of viruses.
2. Recombinant viral vaccines.

**II. Write notes on:**

**(10 x 6 = 60)**

1. LCR.
2. RAPD.
3. Reverse Transcriptase Inhibitors.
4. Double stranded RNA Viruses.
5. BLAST Analysis.
6. Replication of HIV.
7. Ligands.
8. Primer Designing.
9. Genome of influenza Virus.
10. MMR Vaccine.

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[LJ 1016]

OCTOBER 2016

Sub. Code: 9130

**M.Sc. MOLECULAR VIROLOGY EXAMS  
SECOND YEAR  
PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code : 289130***

**Time : Three hours**

**Maximum : 100 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Describe in detail the phylogenetic analysis and tree construction. Write a note on phylogenetic foot printing.
2. Discuss in detail the classes of antiviral drugs with the mechanism of action with end note on drug resistance.

**II. Write notes on:** **(10 x 6 = 60)**

1. Nucleotide databases.
2. Prediction algorithms.
3. Scoring matrices.
4. Si RNA.
5. Anti retro viral chemotherapy.
6. RFLP.
7. Chimeric live viral vaccines.
8. Interferons.
9. Primer designing.
10. Nanotechnology applications.

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[LL 1017]

OCTOBER 2017

Sub. Code: 9130

**M.Sc. MOLECULAR VIROLOGY EXAMS  
SECOND YEAR  
PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

*Q.P. Code : 289130*

**Time : Three hours**

**Maximum : 100 Marks**

**I. Elaborate on:** (2 x 20 = 40)

1. Elaborate on gene library. What is the essential difference between a genomic library and a cDNA library? List the major advantages/limitations on the use of each.
2. Enumerate the advanced molecular techniques. Write in detail about sequencing, methodology and its applications.

**II. Write notes on:** (10 x 6 = 60)

1. Anti-retro viral chemotherapy.
2. Britten and Davidson's model in eukaryotes.
3. DNA vaccines.
4. Name any four proteins involved in the DNA replication in eukaryotes.
5. RAPD.
6. X-ray diffraction technique.
7. Nif Operon.
8. Phylogenetic analysis.
9. Cytokine.
10. Okazaki fragments.

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[LN 1018]

**OCTOBER 2018**

**Sub. Code: 9130**

**M.Sc. MOLECULAR VIROLOGY EXAMS  
SECOND YEAR  
PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code : 289130***

**Time : Three hours**

**Maximum : 100 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Discuss in detail about Micro Array.
2. Discuss in detail about RFLP (Restriction Fragment Length Polymorphism). Add a note on Hybridization techniques.

**II. Write notes on:** **(10 x 6 = 60)**

1. Scoring matrices.
2. Anti retroviral drugs.
3. Cytokines.
4. Chimeric live viral vaccines.
5. Prediction algorithms.
6. Tumor necrosis factor.
7. Nested PCR.
8. Mutations.
9. Bacteriophage uses.
10. Sequencing.

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[LP 1019]

OCTOBER 2019

Sub. Code: 9130

**M.Sc. MOLECULAR VIROLOGY EXAMS  
SECOND YEAR  
PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code : 289130***

**Time : Three hours**

**Maximum : 100 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Write briefly about Viral Vaccines. Discuss the recent trends in Vaccine delivery system.
2. Define Nanotechnology. Write in detail about its applications.

**II. Write notes on:** **(10 x 6 = 60)**

1. Eukaryotic promoter database.
2. Homology modeling.
3. Recombinant vaccines.
4. FASTA.
5. Substitution matrices.
6. Next generation sequencing.
7. Film array.
8. RAPD.
9. Anti retroviral chemotherapy.
10. Mutation.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0321]**

**MARCH 2021**

**Sub. Code: 9130**

**(OCTOBER 2020 EXAM SESSION)**

**M.Sc. MOLECULAR VIROLOGY**

**SECOND YEAR (From 2009-2010 onwards)**

**PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code : 289130***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate notes on:**

**(2 x 20 = 40)**

1. Advanced molecular techniques in Virology. Write in detail about Sequencing methods and applications.
2. Viral vaccines. Write about the types, vaccine delivery system and a note on experimental COVID vaccines.

**II. Write Short Notes on:**

**(10x6 = 60)**

1. Microarray.
2. LCR.
3. Nanotechnology.
4. Search engines.
5. Scoring matrices.
6. Ribozymes.
7. Remdesivir.
8. FASTA.
9. RFLP.
10. Gene therapy.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 1022]**

**OCTOBER 2022**

**Sub. Code: 9130**

**M.Sc. MOLECULAR VIROLOGY  
SECOND YEAR (From 2009-2010 & 2020-2021 onwards)  
PAPER III – RECENT ADVANCES IN MOLECULAR VIROLOGY**

***Q.P. Code : 289130***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate notes on: (2 x 20 = 40)**

1. Discuss in detail the classes of antiviral drugs with mechanism of action. Add a note on drug resistance.
2. Write in detail about Phylogenetic analysis and tree construction. Add a note on foot printing.

**II. Write Short Notes on: (10x6 = 60)**

1. Cytokines.
2. Vaccine delivery system.
3. Hybridization techniques.
4. Antisense RNA.
5. FASTA.
6. Data mining tools.
7. COVID vaccine trials.
8. RT PCR.
9. Sequence alignment.
10. Flow cytometry.

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