This question paper contains 3 printed pages. **Your Roll No. .....**

Sl. No. of Ques. Paper	**: 1461**	**F-7**
Unique Paper Code	**: 2531303**	
Name of Paper	**: Virology**	
Name of Course	**: Microbiology**	
Semester	**: III**	
Duration	**: 3 hours**	
Maximum Marks	**: 75**	

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any five questions.
All questions carry equal marks.

1. (a) Define the following terms with suitable examples (any *seven*):
   (i) Bipartite virus
   (ii) Tumor suppressor gene
   (iii) Viral titre
   (iv) Eclipse period
   (v) Cytopathic effect
   (vi) Terminal redundancy
   (vii) Cell line
   (viii) Virusoid
   (ix) Phage display. 2×7=14

   (b) Give an example of an animal satellite virus. 1

2. (a) Differentiate between any *three* of the following:
   (i) Class I and Class II interferons
   (ii) Viruses and Prions
   (iii) Vertical and Horizontal transmission
   (iv) Paramyxoviridae and Orthomyxoviridae
   (v) Receptor mediated and Non-receptor mediated entry of virus. 3×4=12

   (b) What are unusual bases? Explain their significance in viral genomes. 3

3. Give an example for each of the following (any *fifteen*):

P. T. O.

(i) First virus to be crystallized

(ii) Double stranded DNA virus infecting plants that require reverse transcriptase for replication

(iii) Virus that uses CD4 as receptor to gain entry into the host cell

(iv) Phycophage

(v) Family containing double stranded RNA viruses

(vi) First oncogenic virus to be discovered

(vii) A family of viruses containing LTRs

(viii) Bacteriophage with helical capsid.

(ix) Human disease caused by a prion

(x) Ion Channel blocking antiviral drug

(xi) ssDNA containing plant virus

(xii) Virus with segmented genome

(xiii) Late protein

(xiv) Oncogene

(xv) Continuous cell line

(xvi) Lytic phage

(xvii) Virus with poly A tailed genome. $1 \times 15 = 15$

4. (a) Mention the contributions of the following scientists in the field of virology (any *four*):—

(i) Max Delbruck

(ii) Felix D'Herelle

(iii) Stanley Prusiner

(iv) A Isaac and J Lindemann

(v) Albert Sabin. $1 \cdot 5 \times 4 = 6$

(b) Explain retrograde theory of viral origin. 3

(c) Draw a well labelled diagram of Influenza virus. 4

(d) What is alternate splicing? 2

5. (a) What are the various methods of cultivation of animal viruses? 2

(b) Comment on density gradient centrifugation for purification of viruses. 3

(c) Explain the one step multiplication curve of bacteriophage. 5

(d) Diagrammatically explain the replication of genome of Vaccinia virus *or* Retro virus. 5

6. (a) Name any *two* DNA oncogenic viruses. 2

(b) Explain the assembly of Picornavirus with the help of well labelled diagram. 4

(c) What is killed viral vaccine? Explain with the help of an example. 5

(d) Diagrammatically explain the entry of enveloped virus into the host cell. 3

(e) Name any *one* nucleotide analogue reverse transcriptase inhibitor. 1