[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2040 **L**

Unique Paper Code : 2532012403

Name of the Paper : Virology

Name of the Course : **Microbiology**

Semester : IV

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. Attempt **all** parts of a question together.
4. **All** questions carry equal marks.

Q1 (a) Define the following terms (any ***seven***): 2 x 7 =14

(i) Concatemers
(ii) moi
(iii) Triangulation number
(iv) Prophage
(v) Horizontal Transmission
(vi) Non-segmented genome
(vii) Cos sites
(viii) LTR

(b) Explain one-step multiplication curve of bacteriophages. 4

Q2 (a) Give an example of the following (any ***nine***): 1 x 9 = 9

(i) Zoonotic virus
(ii) dsRNA bacterial virus
(iii) Cone shaped virus
(iv) Re-emerging virus
(v) Virus with ambisense genome
(vi) Unusual base in T4 phage
(vii) Virion with internal membrane
(viii) A member of Flaviviridae family
(ix) RNA bacteriophage
(x) Inactivated viral vaccine

(b) Explain the assembly of T4 phage with the help of well-labelled diagram. 5

P.T.O.

(c) Discuss the capsid symmetry of viruses giving suitable examples. 4

Q3 (a) Write the contribution of the following scientists (any ***four***): 1 x 4 = 4

(i) Albert Sabin
(ii) R. Dulbecco
(iii) D. Ivanowsky
(iv) Isaacs and Lindemann
(v) David Baltimore

(b) What are interferons? Discuss the mode of action of interferons. 6

(c) Discuss the emergence of variants of SARS-CoV2 and its management strategies. 4

(d) Illustrate the concept of early and late genes in the genome of lambda phage using diagram. 4

Q4 Differentiate between the following (any ***six***): 3 x 6 = 18

(i) Persistent and non-persistent transmission
(ii) Recombinant viral vaccine and subunit vaccine.
(iii) Virusoids and Satellite viruses
(iv) Density-gradient and Differential centrifugation
(v) Proto-oncogene and viral oncogene
(vi) Diploid cell strain and continuous cell lines
(vii) Enveloped and Non-Enveloped Virus

Q5 (a) Discuss the salient features of influenza virus **OR** replication of geminivirus. 5

(b) Give two examples each of oncogenic RNA and DNA viruses. 2 + 2 = 4

(c) Explain the mode of action of lamivudine. 3

(d) Draw the genome of hepatitis B virus and discuss its salient features. 6

Q6 (a) Explain the control and management strategies of H1N1 and Dengue virus. 6

(b) Write short notes on the following (any ***three***): 4 x 3 = 12

(i) VLPs
(ii) Giant viruses
(iii) Prions
(iv) Live attenuated vaccines