Roll No. .....

Question Booklet Number

O. M. R. Serial No. | | | | | | | | |

M. Sc. (Microbiology) (Second Semester)

EXAMINATION, July, 2022

VIROLOGY

Paper Code				
MIC	2	0	0	4

Questions Booklet Series
B

Time : 1:30 Hours] [*Maximum Marks : 100*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 60 questions. Examinee is required to answer any 50 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 50 questions are attempted by student, then the first attempted 50 questions will be considered for evaluation. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 60 प्रश्न हैं। परीक्षार्थी को किन्हीं 50 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 50 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 50 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page) (शेष निर्देश अन्तिम पृष्ठ पर)

(Only for Rough Work)

1. What is the most important factor for virus classification ?

(A) genome chemistry

(B) capsid symmetry

(C) presence or absence of envelop

(D) disease caused by the virus

2. The viral envelope is made up of _____

(A) Proteins

(B) Glycoproteins

(C) Lipids and Proteins

(D) All of the above

3. Viral genome inserted to the bacterial DNA is termed as_____

(A) Lysogeny

(B) Prophase

(C) Lytic cycle

(D) Virulent phage

4. Baltimore's classification is based on the importance of which of the following ?

(A) RNA

(B) mRNA

(C) Positive strand RNA

(D) DNA

5. Which of the following group as per Baltimore's classification contains ssDNA genome viruses ?

(A) I

(B) II

(C) III

(D) IV

6. Coronavirus SARS Cov 2 belongs to which group as per the Baltimore's classification ?

(A) I

(B) II

(C) III

(D) IV

7. Match the following viruses with the type of genetic material they have :

(i)	Double stranded DNA	(a)	Bacteriophages
(ii)	Single stranded DNA	(b)	Adenovirus
(iii)	Double stranded RNA	(c)	Reoviruses
(iv)	Single stranded RNA	(d)	Tobacco Mosaic virus

Codes :

(A) (i)-b, (ii)-a, (iii)-c, (iv)-d

(B) (i)-a, (ii)-d, (iii)-b, (iv)-c

(C) (i)-b, (ii)-c, (iii)-a, (iv)-d

(D) (i)-b, (ii)-d, (iii)-c, (iv)-a

8. Positive stranded RNA viruses have which of the following characteristics ?

(A) Their genome RNA can be translated directly as mRNA.

(B) They have to transcribe their genome RNA to a mirror image copy as a mRNA.

(C) This genome is circular.

(D) Their RNA genome is segmented.

9. Which of the following diseases is not caused by togaviruses ?

(A) Chikungunya

(B) Rubella (German measles)

(C) Western Equine encephalitis

(D) Yellow fever

10. Picornavirus replication as a positive strand RNA virus is particularly typified by which of the following ?

(A) Virions carry RNA transcriptase enzyme into the cell.

(B) The virion RNA is translated into a single large polyprotein.

(C) The virion DNA acting as mRNA.

(D) The virus exits by apoptosis of the cell.

11. What are the morphological features of Rotavirus ?

(A) Indistinct morphology with contractile tail

(B) Double layered protein with spikes

(C) Enveloped virus with glycoprotein spikes

(D) Helical virus

12. What is the main genetic characteristic of the herpes virus family ?

(A) Large linear DNA genome

(B) Small ssDNA genome

(C) Segmented DNA genome

(D) Circular dsDNA genome

13. What is the morphology of the herpes simplex virus ?

(A) Complex with a membrane and tegument and icosahedron core

(B) Naked virion with over 50 types of spikes

(C) Compact icosahedron structure

(D) Small round virus

14. What are the major applications of Adenovirus ?

(A) As vectors for carrying genes of other viruses

(B) For understanding RNA functions

(C) Understanding the function of reverse transcriptase enzyme

(D) Study of gene expression at the levels of transcription

15. Adenovirus replication strategy uncovered which of these major molecular biology discovery ?

(A) The function of RT

(B) Mechanism of replication of DNA

(C) The importance and frequency of mRNA splicing

(D) The speed of action of viral DNA dependent DNA polymerase

16. The replication of hepatitis B includes which of the following stages ?

(A) Movement of intact virus to the cellular cytoplasm for replication

(B) Conversion of relaxed circular viral DNA into covalently closed circular (CCC) DNA in the nucleus

(C) Virions produced in the cytoplasm by cellular DNA polymerase

(D) Oncogenic activity to transform liver cells.

17. The genetic map of phage T_4 is circular because :

(1) The sequence is terminally redundant.

(2) The sequence is circularly permuted.

(3) The sequence is 50 kbp long.

Codes :

(A) (1)

(B) (2)

(C) (3)

(D) (1) and (2)

18. The first DNA based sequencing was performed for :

(A) T_4 phage

(B) T_7 phage

(C) Phi X174 phage

(D) M_{13} phage

19. Transposable phage is :

(A) T_4 phage

(B) Mu phage

(C) Phi X174 phage

(D) M_{13} phage

20. When bacteriophage λ integrates into the bacterial chromosome, it does so at :

(A) An att P site in the host chromosome.

(B) An att B site in the phage chromosome.

(C) An att B site in the host chromosome using a lambda-encoded integrase.

(D) An att B site in the host chromosome using a bacteria-encoded integrase.

21. Diagnosis of Tobacco Mosaic Virus can be done using :

(A) ELISA

(B) Real Time PCR

(C) Plant bioassay

(D) All of the above

22. HIV is not transmitted by which of the following routes of infection ?

(A) Sexual

(B) Parenteral

(C) Vertical

(D) Mosquito borne

23. Example of filamentous phage is :

(A) T_4 phage

(B) Lambda phage

(C) Phi X174 phage

(D) M_{13} phage

24. Which of the following is an example of Group II virus ?

(A) Pox virus

(B) Rotavirus

(C) Phi X174

(D) All of the above

25. Bacteriophage was discovered by :

(A) Beijerinck

(B) Joseph Lister

(C) Louis Pasteur

(D) Twort and d'Herelle

26. Pox virus is transmitted by :

(A) Sexual route

(B) Respiratory route

(C) Blood borne

(D) None of the above

27. The envelope of a virus is derived from the host's :

(A) nucleic acids

(B) membrane structures

(C) cytoplasm

(D) genome

28. Negative sense RNA strand is also known as :

(A) Sense RNA

(B) Antisense RNA

(C) cDNA

(D) All of the above

29. Viruses can be cultured in all, except_____.

(A) Chick embryo

(B) Blood agar

(C) Guinea pigs

(D) Cell culture

30. In naming viruses, the family name ends with _____ and genus name ends with _____.

(A) virus; viridae

(B) viridae; virus

(C) virion; virus

(D) virus; virion

31. What is the name for the transfer of genetic information from one bacterium to another bacterium by a phage ?

(A) Transduction

(B) Penetration

(C) Excision

(D) Translation

32. Viruses that infect Cyanobacteria are known as :

(A) Mycophages

(B) Cyanophages

(C) Both of the above

(D) None of the above

33. Infecions caused due to viral genome integrated in host genome is known as :

(A) Acute infections

(B) Chronic infections

(C) Latent infections

(D) None of the above

34. Example of lysogenic bacteriophage is :

(A) M_{13}

(B) T_2

(C) T_7

(D) Phi X174

35. If 10^7 pfu/ml of phage is used to infect 10^8 cful/ml *E. coli*, MOI used would be :

(A) 0.1 MOI

(B) 1.0 MOI

(C) 10 MOI

(D) None of the above

36. In One Step Growth Curve, the number of virions per bacterium released is described as :

(A) Latent period

(B) Incubation size

(C) Burst size

(D) All of the above

37. Example of dsDNA Group I virus that replicates in the cytoplasm is :

(A) Polyoma virus

(B) Pox virus

(C) Herpes virus

(D) Adeno virus

38. In an Indirect ELISA, the enzyme :

(A) is bound by the antibody's antigen-binding site.

(B) is attached to the well of a microtiter plate.

(C) is conjugated to the antigen.

(D) is bound to the constant region of the secondary antibody.

39. Bacteriophage is also known as lytic or virulent phage :

(A) Lambda phage

(B) Toga virus

(C) T_7 phage

(D) M_{13} phage

40. The difference in replication strategy of Group I and Group VII dsDNA virus is :

(A) Genome synthesis occurs using DNA dependent DNA polymerase in Group I and RNA dependent DNA polymerase in Group VII

(B) Genome synthesis occurs using DNA dependent RNA polymerase in Group I and RNA dependent DNA polymerase in Group VII

(C) Genome synthesis occurs using DNA dependent DNA polymerase in Group I and RNA dependent RNA polymerase in Group VII

(D) Genome synthesis occurs using RNA dependent DNA polymerase in Group I and DNA dependent DNA polymerase in Group VII

41. In lambda phage, Cro acts as

(A) Binds OR1 and represses Cl synthesis and activates lytic pathway

(B) Binds OR2 and represses Cl synthesis and activates lytic pathway

(C) Binds OR3 and represses Cl synthesis and activates Iytic pathway

(D) All of the above

42. Cos site in lambda phage genome _____.

(A) Represents junction between 2 genome sequence in a concatamer

(B) Represents specific packaging termination sequence.

(C) Represents site for in-vitro packaging in cosmid vectors

(D) All of the above

43. Formation of long genome strands linked together in the same direction following rolling circle model is known as :

(A) Connections

(B) Concatamers

(C) Roiling circle pins

(D) All of the above

44. Infections caused by Human Immunodeficiency Virus is known as :

(A) Acquired Immunodeficiency Syndrome

(B) Accrued Immunodeficiency Syndrome

(C) Acquired Immunocompetency Syndrome

(D) None of the above

45. Viral Infectivity Dose 50 is :

(A) the number of viruses sufficient to infect 50% of a given susceptible population

(B) 50% viruses sufficient to infect a certain given susceptible population

(C) Both of the above

(D) None of the above

46. Which of the following is known as the father of Virology ?

(A) Martinus Beijerinck

(B) Dmitri lvanowsky

(C) W. Stanley

(D) Louis Pasteur

47. The viral genome is packaged into a proteinaceous structure known as :

(A) capsomere

(B) capsid

(C) envelop

(D) core

48. Viruses can be transmitted in plant by :

(A) Plasmodesmata

(B) Insect vectors

(C) Mechanical

(D) All of the above

49. Virus that was first isolated was :

(A) Pox virus

(B) Rabies virus

(C) Tobacco Mosaic virus

(D) T bacteriophage

50. Viruses are_____ .

(A) Unicellular

(B) Multicellular

(C) Acellular

(D) Prokaryotes

51. Which of the following viruses contains the currently known largest genome size ?

(A) HBV

(B) Phage lambda

(C) Mimivirus

(D) Pox virus

52. An icosahedron is an object or symmetry with :

(A) 20 faces, 12 vertices and 30 edges.

(B) 12 faces, 20 vertices and 30 edges.

(C) 30 faces, 12 vertices and 20 edges.

(D) None of the above

53. Viral capsid symmetry shaped in a filamentous or rod-shaped structure that has a central cavity that encloses its nucleic acid is known as :

(A) Icosahedral

(B) Helical

(C) Complex

(D) Filamentous

54. The Tobacco Mosaic virus was crystallized for first time by :

(A) W. M. Stanley

(B) Louis Pasteur

(C) Edward Jenner

(D) Andre Lwoff

55. Which of the following has responsibility for the assignment of new viruses to specific groupings and authorizes the nomenclature and taxonomic classification of viruses ?

(A) International Committee on Taxonomy of Viruses

(B) World Committee on Taxanomy of Viruses

(C) Bergeys Manual of Determinative Microbiology

(D) International Committee for Virology

56. Capsid is composed 60 asymmetric units made of 3 protein for a total of 180 capsid proteins will refer to as :

(A) Triangulation Number T = 60

(B) Triangulation Number T = 1

(C) Triangulation Number T = 3

(D) Triangulation Number T = 7

57. Example of enveloped virus is :

(A) T_3 phage

(B) T_7 phage

(C) HIV

(D) Adenovirus

58. Which of the following classes consists of ambisense viruses ?

(A) Class V

(B) Class VII

(C) Class III

(D) Class IV

59. Prions or infectious proteins are also referred to as :

(A) Persistent virus

(B) Satellite virus

(C) Slow virus

(D) Latent virus

60. According to LHT classification system of viruses DNA viruses are categorised in phylum :

(A) Deoxyvira

(B) Ribovira

(C) Deoxypoxyvira

(D) Mexovira

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

Q. 1 (A) ● (C) (D)
Q. 2 (A) (B) ● (D)
Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is ny discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर— A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छाँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ● (C) (D)
प्रश्न 2 (A) (B) ● (D)
प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।