Roll No. .....

Question Booklet Number

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

M. Sc. (Microbiology) (Second Semester) EXAMINATION, 2025-26

(Old Syllabus Effective from 2022)

(Only Back Paper Students)

VIROLOGY

Paper Code							
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Questions Booklet Series
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Time : 1:30 Hours] [*Maximum Marks : 75*

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.

2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. 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 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। 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. Viral oncogenesis involves :

(A) Host cell transformation

(B) Cell wall synthesis

(C) Protein denaturation

(D) RNA degradation

2. The tail fibers of bacteriophages are important for :

(A) Protein synthesis

(B) Genome replication

(C) Host recognition

(D) Capsid assembly

3. The cytopathic effect in cell culture can be observed by :

(A) Light microscopy

(B) Electron microscopy

(C) PCR

(D) ELISA

4. The plaque assay is used to determine :

(A) Antibody titer

(B) Nucleic acid sequence

(C) Viral protein concentration

(D) Number of infectious viral particles

5. The Baltimore classification has how many groups ?

(A) Six

(B) Five

(C) Seven

(D) Eight

6. The lysogenic conversion can lead to :

(A) Acquisition of new traits by bacteria

(B) Immediate cell death

(C) Protein denaturation

(D) RNA degradation

7. NPV (nuclear polyhedrosis virus) infects :

(A) Plants

(B) Insects

(C) Bacteria

(D) Fungi

8. Mycophages infect :

(A) Cyanobacteria

(B) Fungi

(C) Plants

(D) Protozoa

9. The yolk sac of embryonated eggs is suitable for cultivation of :

(A) Rickettsia

(B) Influenza virus

(C) Poxvirus

(D) Adenovirus

10. Phage display is used for :

(A) Antibiotic synthesis

(B) DNA replication

(C) RNA degradation

(D) Studying protein-protein interactions

11. The nucleic acid of retroviruses is :

(A) DNA

(B) RNA

(C) Both (A) and (B)

(D) Protein

12. Nanotechnology applications of viruses include :

(A) Protein denaturation

(B) Antibiotic synthesis

(C) Virus-like particles for drug delivery

(D) RNA degradation

13. siRNA controls viral infections by :

(A) Stimulating bacterial growth

(B) Enhancing viral replication

(C) Blocking antibody production

(D) Silencing specific viral genes

14. PVY is transmitted by :

(A) Soil

(B) Mosquitoes

(C) Fungi

(D) Aphids

15. The lytic cycle of bacteriophages results in :

(A) Immediate host cell lysis

(B) Integration of viral genome

(C) Latent infection

(D) Transformation

16. The nucleic acid of adenoviruses is :

(A) Single-stranded RNA

(B) Double-stranded DNA

(C) Double-stranded RNA

(D) Single-stranded DNA

17. TMV infects :

(A) Tobacco plants

(B) Rice plants

(C) Fungi

(D) Humans

18. The end-point dilution assay measures :

(A) Viral protein amount

(B) Antibody concentration

(C) Infective dose (ID50)

(D) Nucleic acid content

19. PVX is a virus of :

(A) Potato

(B) Tomato

(C) Rice

(D) Wheat

20. Prions are infectious agents composed of :

(A) Protein + nucleic acid

(B) DNA only

(C) RNA only

(D) Protein only

21. HIV primarily infects :

(A) B cells

(B) CD4+ T cells

(C) Neutrophils

(D) Red blood cells

22. The lytic cycle is characterized by :

(A) Rapid multiplication and host cell death

(B) Integration of viral DNA

(C) Latency

(D) Transformation

23. The hemagglutination assay detects viruses that :

(A) Bind to antibodies

(B) Lyse bacterial cells

(C) Agglutinate red blood cells

(D) Replicate in cell culture

24. Rotavirus causes :

(A) Respiratory infections

(B) Gastroenteritis in children

(C) Hepatitis

(D) HIV

25. Herpesvirus genome is :

(A) Protein

(B) Single-stranded RNA

(C) Double-stranded RNA

(D) Double-stranded DNA

26. The genome of ψX174 phage is :

(A) Double-stranded RNA

(B) Double-stranded DNA

(C) Single-stranded RNA

(D) Single-stranded DNA

27. Continuous cell lines differ from primary cell cultures because they :

(A) Can divide indefinitely

(B) Have limited lifespan

(C) Are derived from embryonic tissue only

(D) Cannot support viral replication

28. Icosahedral symmetry in viruses is characterized by :

(A) Complex structure

(B) Helical arrangement

(C) 20 triangular faces

(D) Spherical envelope

29. Ribozymes act as :

(A) Viral proteins

(B) Catalytic RNA molecules

(C) DNA polymerases

(D) Antibodies

30. Hepatitis B virus genome is :

(A) Partially double-stranded DNA

(B) Single-stranded RNA

(C) Double-stranded RNA

(D) Protein

31. The filamentous phage M13 is used in :

(A) Electron microscopy

(B) Vaccine production

(C) Antibiotic synthesis

(D) Phage display technology

32. The purification of viruses often involves :

(A) Gel electrophoresis

(B) Ultracentrifugation

(C) Western blotting

(D) ELISA

33. Antisense RNA works by :

(A) Blocking translation of viral mRNA

(B) Enhancing protein synthesis

(C) Destroying DNA directly

(D) Stimulating antibody production

34. Cyanophages contribute to :

(A) Plant virus transmission

(B) Antibiotic synthesis

(C) Nutrient cycling in aquatic ecosystems

(D) Protein folding

35. The nucleic acid of parvoviruses is :

(A) Single-stranded RNA

(B) Double-stranded DNA

(C) Single-stranded DNA

(D) Double-stranded RNA

36. Chemotherapeutic agents against viruses are called :

(A) Antivirals

(B) Antibiotics

(C) Antifungals

(D) Immunosuppressants

37. Which part of the embryonated egg is used for poxvirus cultivation ?

(A) Yolk sac

(B) Amniotic cavity

(C) Allantoic cavity

(D) Chorioallantoic membrane

38. Herpesvirus establishes :

(A) Acute infections only

(B) Latent infections

(C) Chronic hepatitis

(D) Plant disease

39. Interferons act by :

(A) Inhibiting viral replication

(B) Destroying viral proteins directly

(C) Blocking antibody production

(D) Enhancing bacterial growth

40. The MS2 phage genome encodes :

(A) DNA polymerase only

(B) Coat protein, replicase, lysis protein

(C) Reverse transcriptase

(D) Capsid proteins only

41. The hemagglutination inhibition assay is used to measure :

(A) Protein concentration

(B) Viral genome size

(C) Antibody titers against viruses

(D) Infective dose

42. The capsid of bacteriophage T4 is :

(A) Spherical

(B) Icosahedral

(C) Helical

(D) Complex

43. The MS2 phage contains :

(A) Double-stranded DNA genome

(B) Single-stranded RNA genome

(C) Double-stranded RNA genome

(D) Protein genome

44. Embryonated eggs are commonly used for cultivation of :

(A) Influenza virus

(B) HIV

(C) Adenovirus

(D) Hepatitis B virus

45. The Baltimore classification system categorizes viruses based on :

(A) Host range

(B) Type of nucleic acid

(C) Capsid morphology

(D) Envelope presence

46. The first successful vaccine was developed against :

(A) Smallpox

(B) Polio

(C) Rabies

(D) Influenza

47. Adenoviruses are associated with :

(A) Hepatitis

(B) Respiratory infections

(C) HIV

(D) Plant diseases

48. The lysogenic cycle involves :

(A) No replication

(B) Immediate lysis of host cell

(C) Production of viral proteins only

(D) Integration of phage DNA into host genome

49. The most common cell line used for influenza virus cultivation is :

(A) Vero cells

(B) HeLa cells

(C) MDCK cells

(D) BHK-21 cells

50. Who first demonstrated that tobacco mosaic disease was caused by a filterable agent ?

(A) Robert Koch

(B) Louis Pasteur

(C) Dmitri Ivanovsky

(D) Wendell Stanley

51. Mycophages are important in :

(A) Antibiotic resistance

(B) Biological control of fungi

(C) Plant virus transmission

(D) Bacterial transformation

52. DNA vaccines work by :

(A) Enhancing bacterial growth

(B) Blocking protein synthesis

(C) Destroying DNA

(D) Inducing host cells to produce viral antigens

53. The most sensitive method for detecting viral nucleic acids is :

(A) RT-PCR

(B) ELISA

(C) Western blot

(D) Immunodiffusion

54. Which virus classification scheme is based on ICTV guidelines ?

(A) Taxonomic hierarchy

(B) Baltimore system

(C) Host-based classification

(D) Morphological classification

55. Gene therapy using retroviruses involves :

(A) Enhancing bacterial growth

(B) Blocking protein synthesis

(C) Destroying DNA

(D) Integration of therapeutic genes into host genome

56. Phage display technology was pioneered by :

(A) Louis Pasteur

(B) George Smith

(C) Jonas Salk

(D) Edward Jenner

57. Which assay is used for quantitative detection of viral antigens ?

(A) Western blot

(B) PCR

(C) ELISA

(D) Immunodiffusion

58. Which animal model is used for studying poliovirus ?

(A) Monkeys

(B) Rabbits

(C) Guinea pigs

(D) Rats

59. Satellite viruses require :

(A) Host ribosomes only

(B) Helper virus for replication

(C) Independent replication

(D) No host involvement

60. Oncolytic viruses are used in :

(A) Protein folding

(B) Antibiotic synthesis

(C) Cancer therapy

(D) Plant transformation

61. Togaviruses include :

(A) Rubella virus

(B) Adenovirus

(C) Rotavirus

(D) Hepatitis B virus

62. The T4 phage tail contracts to :

(A) Release progeny

(B) Assemble capsid proteins

(C) Produce enzymes

(D) Inject DNA into host

63. Cyanophages play a role in :

(A) Antibiotic production

(B) Regulation of algal blooms

(C) Fungal infections

(D) Plant disease

64. The capsid proteins are encoded by :

(A) Ribosomal RNA

(B) Host genome

(C) Viral genome

(D) Helper virus

65. The smallest known infectious agent is :

(A) Prion

(B) Viroid

(C) Satellite virus

(D) Bacteriophage

66. The M13 phage genome is :

(A) Protein

(B) Linear double-stranded DNA

(C) Circular RNA

(D) Circular single-stranded DNA

67. The filamentous phage M13 exits host cells by :

(A) Integration

(B) Immediate lysis

(C) Budding without lysis

(D) Endocytosis

68. The envelope glycoproteins of viruses are important for :

(A) Genome replication

(B) Host cell recognition

(C) Capsid assembly

(D) Nucleic acid synthesis

69. Virus-like particles are used in :

(A) RNA degradation

(B) Antibiotic production

(C) Protein denaturation

(D) Vaccine development

70. DNA viruses causing cancer include :

(A) Papillomavirus

(B) Retrovirus

(C) Togavirus

(D) Rotavirus

71. Which assay is used to measure viral infectivity in animals ?

(A) LD50 assay

(B) ELISA

(C) PCR

(D) Western blot

72. Plant viral diseases can be controlled by :

(A) Antifungals

(B) Antibiotics

(C) Vector management

(D) Vaccines

73. Which method separates viruses based on density ?

(A) Electrophoresis

(B) Chromatography

(C) Density gradient centrifugation

(D) Immunodiffusion

74. The nucleic acid of retroviruses is :

(A) Single-stranded DNA

(B) Double-stranded DNA

(C) Double-stranded RNA

(D) Single-stranded RNA

75. Ribavirin is used against :

(A) HIV

(B) Respiratory syncytial virus

(C) Hepatitis B

(D) Rotavirus

76. Viral transformation of host cells involves :

(A) Cell wall synthesis

(B) Protein denaturation

(C) RNA degradation

(D) Alteration of cell cycle regulation

77. The amniotic cavity of embryonated eggs is used for cultivation of :

(A) Influenza virus

(B) Poxvirus

(C) Adenovirus

(D) HIV

78. Prions cause disease by :

(A) Blocking transcription

(B) Destroying nucleic acids

(C) Inducing misfolding of normal proteins

(D) Inhibiting translation

79. Antiviral drug AZT is used against :

(A) Hepatitis B

(B) HIV

(C) Influenza

(D) Rotavirus

80. The MS2 phage is used in studies of :

(A) RNA replication

(B) DNA replication

(C) Protein folding

(D) Capsid assembly

81. RNA viruses causing cancer include :

(A) Poxvirus

(B) Adenovirus

(C) Herpesvirus

(D) HTLV-1

82. Poxvirus replication occurs in :

(A) Nucleus

(B) Cytoplasm

(C) Mitochondria

(D) Endoplasmic reticulum

83. The neutralization test is based on :

(A) Antibody-mediated inhibition of viral infectivity

(B) Direct visualization of virus

(C) Protein quantification

(D) Nucleic acid sequencing

84. Transgenic systems are used in virology for :

(A) Studying viral gene function

(B) Protein purification

(C) Antibody production only

(D) Bacterial culture

85. The Baltimore Group VI viruses replicate via :

(A) Reverse transcription

(B) RNA polymerase

(C) DNA polymerase

(D) Protein synthesis

86. NPV is used in :

(A) Plant transformation

(B) Antibiotic production

(C) Pest control

(D) Protein synthesis

87. Rubella virus is transmitted by :

(A) Fungi

(B) Mosquitoes

(C) Soil

(D) Respiratory route

88. RNA tumor viruses include :

(A) Retroviruses

(B) Adenoviruses

(C) Herpesviruses

(D) Poxviruses

89. The cytopathic effect (CPE) in cell culture indicates :

(A) Bacterial contamination

(B) Cell differentiation

(C) Viral replication

(D) Protein synthesis

90. Lysogeny provides bacteria with :

(A) Increased protein synthesis

(B) Immunity to superinfection

(C) Antibiotic resistance

(D) Cell wall modification

91. The envelope of herpesvirus is acquired from :

(A) Endoplasmic reticulum

(B) Plasma membrane

(C) Nuclear membrane

(D) Golgi apparatus

92. Hepatitis C virus belongs to :

(A) Flaviviridae

(B) Adenoviridae

(C) Retroviridae

(D) Togaviridae

93. The burst size of a bacteriophage is :

(A) Length of latent period

(B) Time taken for replication

(C) Size of phage genome

(D) Number of phages released per cell

94. DNA tumor viruses include :

(A) Adenovirus

(B) Retrovirus

(C) Togavirus

(D) Rotavirus

95. Lambda phage is an example of :

(A) Virulent phage

(B) Temperate phage

(C) RNA phage

(D) Satellite phage

96. Which scientist crystallized TMV, proving its non-cellular nature ?

(A) Charles Chamberland

(B) Edward Jenner

(C) Wendell Stanley

(D) Martinus Beijerinck

97. Interferon alpha is used in treatment of :

(A) HIV

(B) Hepatitis B and C

(C) Influenza

(D) Rabies

98. The polio vaccine developed by Jonas Salk is :

(A) DNA vaccine

(B) Live attenuated vaccine

(C) Subunit vaccine

(D) Inactivated vaccine

99. Which virus has a helical capsid symmetry ?

(A) Adenovirus

(B) Influenza virus

(C) Herpesvirus

(D) Poxvirus

100. Gene therapy using viruses involves :

(A) Blocking protein synthesis

(B) Delivery of therapeutic genes

(C) Destroying DNA

(D) Enhancing bacterial growth

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct 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 any 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 सही 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।