

Roll No.

Question Booklet Number

O. M. R. Serial No.

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M. Sc. (Microbiology) (Fourth Semester)
EXAMINATION, 2025-26
(New Syllabus Effective from 2023)

ADVANCED IMMUNOLOGY & IMMUNOTECHNIQUES

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. Which vaccine type induces the strongest cellular immunity ?
 - (A) Subunit
 - (B) Inactivated
 - (C) Live attenuated
 - (D) Toxoid
2. MALT stands for :
 - (A) Muscle-associated lymphoid tissue
 - (B) Memory-associated lymphoid tissue
 - (C) Mucosa-associated lymphoid tissue
 - (D) Microbial-associated lymphoid tissue
3. Peyer's patches are found in :
 - (A) Liver
 - (B) Intestine
 - (C) Brain
 - (D) Kidney
4. Adjuvants are added to vaccines to :
 - (A) Enhance immune Response
 - (B) Sensitize pathogens
 - (C) Reduce cost
 - (D) Increase mutation
5. NK cells recognize targets by :
 - (A) Lack of Antibodies
 - (B) Lack of MHC I
 - (C) Breakdown of DNA
 - (D) Breakdown of RNA
6. Lymphocytes circulate through :
 - (A) Blood only
 - (B) Lymph only
 - (C) Blood and Lymph
 - (D) Air
7. Which vaccine type is safest for immunocompromised individuals ?
 - (A) Live attenuated
 - (B) Vector vaccine
 - (C) DNA vaccine
 - (D) Inactivated
8. Germinal centres are found in _____ and are sites for maturation of _____.
 - (A) Bone marrow ; B cells
 - (B) Liver; Kupffer cells
 - (C) Thymus; T cells
 - (D) Lymph nodes; B cells
9. Antigen trapping mainly occurs in :
 - (A) Bone marrow
 - (B) Secondary lymphoid organs
 - (C) Muscles
 - (D) Brain

10. Which type of vaccine contains weakened but live pathogens ?
- (A) Inactivated vaccine
 - (B) Subunit vaccine
 - (C) Live attenuated vaccine
 - (D) DNA vaccine
11. NK cells kill :
- (A) Bacteria
 - (B) RBCs
 - (C) Virus-infected cells
 - (D) Platelets
12. Natural killer (NK) cells are part of :
- (A) Adaptive immunity
 - (B) Innate immunity
 - (C) Humoral immunity
 - (D) Artificial immunity
13. Basophils release :
- (A) Antibodies
 - (B) Enzymes
 - (C) DNA
 - (D) Histamine
14. Eosinophils are mainly involved in :
- (A) Parasitic infection
 - (B) Viral infection
 - (C) Bacterial infection
 - (D) Cancer
15. Neutrophils are :
- (A) Lymphocytes
 - (B) Phagocytic cells
 - (C) Hormonal cells
 - (D) Memory cells
16. The most potent antigen-presenting cells are :
- (A) Neutrophils
 - (B) RBCs
 - (C) Dendritic cells
 - (D) Platelets
17. Dendritic cells are specialized for :
- (A) Oxygen transport
 - (B) Antigen presentation
 - (C) Antibody secretion
 - (D) Digestion
18. Macrophages function mainly in :
- (A) Oxygen transport
 - (B) Clotting
 - (C) Hormone secretion
 - (D) Phagocytosis
19. Macrophages are derived from :
- (A) Lymphocytes
 - (B) Monocytes
 - (C) Neutrophils
 - (D) Basophils

20. Memory cells are important for :
- (A) Secondary Response
 - (B) First Response
 - (C) Digestion
 - (D) Transport
21. The immune system protects genetic integrity by :
- (A) Mutation
 - (B) Destroying foreign agents
 - (C) Replication
 - (D) Growth
22. Skin is part of :
- (A) Adaptive immunity
 - (B) Cellular immunity
 - (C) Humoral immunity
 - (D) Innate immunity
23. Lymphocyte repertoire means :
- (A) Single specificity
 - (B) Many specificities
 - (C) No specificity
 - (D) Weak response
24. Diversity refers to :
- (A) Same antigen recognition
 - (B) Multiple antigen recognition
 - (C) No recognition
 - (D) Weak response
25. Effector phase of immune system involves :
- (A) Recognition
 - (B) Activation
 - (C) Destruction of antigen
 - (D) Memory formation
26. Secondary immune response is :
- (A) Faster
 - (B) Slower
 - (C) Weak
 - (D) Absent
27. Cytokines are produced by :
- (A) RBCs
 - (B) DNA
 - (C) Platelets
 - (D) T cells
28. Antibodies recognize antigens in :
- (A) Processed form
 - (B) DNA form
 - (C) Native form
 - (D) RNA form
29. T cells mainly target :
- (A) Extracellular microbes
 - (B) Intracellular pathogens
 - (C) Lipids
 - (D) Proteins

30. B cells respond to :
- (A) Intracellular antigens
 - (B) RNA
 - (C) DNA
 - (D) Extracellular antigens
31. HLA genes code for which molecules :
- (A) MHC molecules
 - (B) DNA
 - (C) RNA
 - (D) Lipids
32. Passive immunity involves :
- (A) Self-production
 - (B) Transfer of antibodies
 - (C) Mutation
 - (D) DNA repair
33. **Assertion :** All APCs express MHC II.
Reason : MHC II is present on all nucleated cells.
- (A) Both Assertion and Reason are true, and Reason is a correct explanation
 - (B) Both true, but Reason is NOT the correct explanation
 - (C) Assertion true, Reason false
 - (D) Assertion false, Reason true
34. **Assertion :** NK cells require antigen presentation.
Reason : NK cells recognize MHC I.
- (A) Both Assertion and Reason are true, and Reason is a correct explanation
 - (B) Both true, but Reason is NOT the correct explanation
 - (C) Assertion true, Reason false
 - (D) Assertion false, Reason true
35. **Assertion :** MHC I is expressed only on APCs.
Reason : APCs present the Antigen.
- (A) Both Assertion and Reason are true, and Reason is a correct explanation
 - (B) Both true, but Reason is NOT the correct explanation
 - (C) Assertion true, Reason false
 - (D) Assertion false, Reason true

36. **Assertion :** Memory cells are formed in innate immunity.
- Reason :** Innate immunity lacks specificity.
- (A) Both Assertion and Reason are true, and Reason is a correct explanation
- (B) Both true, but Reason is NOT the correct explanation
- (C) Assertion true, Reason false
- (D) Assertion false, Reason true
37. **Assertion :** Complement activation causes cell lysis.
- Reason :** MAC forms pores in membranes of its target.
- (A) Both Assertion and Reason are true, and Reason is a correct explanation
- (B) Both true, but Reason is NOT the correct explanation
- (C) Assertion true, Reason false
- (D) Assertion false, Reason true
38. A patient produces many antibodies with low affinity. Defect ?
- (A) Class switching
- (B) Hypermutation
- (C) Complement
- (D) Cytokines
39. T cells do NOT :
- (A) Recognize antigens
- (B) Activate immunity
- (C) Kill infected cells
- (D) Produce antibodies
40. B-cell receptors are :
- (A) Antibodies
- (B) DNA
- (C) Enzymes
- (D) Hormones
41. A tumor evades immunity by reducing antigen presentation. Which pathway is affected ?
- (A) MHC I
- (B) MHC II
- (C) Complement
- (D) Cytokines

42. A patient shows high IFN- γ . Effect ?
- (A) B-cell suppression
 - (B) Macrophage activation
 - (C) NK inhibition
 - (D) IgE production
43. Haptens require :
- (A) DNA
 - (B) RNA
 - (C) Carrier protein
 - (D) Lipids
44. Antigen receptors are present on :
- (A) RBCs
 - (B) Neurons
 - (C) Platelets
 - (D) Lymphocytes
45. Which cannot act as an antigen ?
- (A) Protein
 - (B) Polysaccharide
 - (C) Water
 - (D) Lipid
46. A patient has no germinal centres. What is impaired ?
- (A) T-cell activation
 - (B) B-cell proliferation
 - (C) NK activity
 - (D) Complement
47. Innate immunity does NOT :
- (A) Recognize pathogens
 - (B) Use cells
 - (C) Protect body
 - (D) Distinguish between antigens
48. A patient produces antibodies but cannot clear intracellular pathogens. Defect is present in :
- (A) Humoral immunity
 - (B) Cellular immunity
 - (C) Complement
 - (D) NK cells
49. The immune system includes :
- (A) Only cells
 - (B) Only proteins
 - (C) Cells, molecules, and genes
 - (D) Only DNA
50. A patient lacks complement C3. Is the main defect is manifested in ?
- (A) Antibody production
 - (B) Opsonization
 - (C) T-cell activation
 - (D) Memory formation

51. A mutation in BTK enzyme affects :
- (A) B cells
 - (B) T cells
 - (C) Complement
 - (D) NK cells
52. A patient cannot generate a memory response. Defect in :
- (A) Innate immunity
 - (B) NK cells
 - (C) Complement
 - (D) Adaptive immunity
53. A dendritic cell presents extracellular Antigen via MHC I. This is :
- (A) Normal processing
 - (B) Cross-presentation
 - (C) Mutation
 - (D) Error
54. A patient lacks MHC I expression. Which cells fail to activate ?
- (A) CD4+ T cells
 - (B) CD8+ T cells
 - (C) B cells
 - (D) Macrophages
55. A mutation prevents antibody class switching. Which remains predominant ?
- (A) IgG
 - (B) IgA
 - (C) IgE
 - (D) IgM
56. A patient shows the absence of the thymus. Which cells are deficient ?
- (A) B cells
 - (B) T cells
 - (C) RBCs
 - (D) Platelets
57. A child develops recurrent bacterial infections but normal viral resistance. Likely defect ?
- (A) T cells
 - (B) Complement
 - (C) NK cells
 - (D) B cells
58. HIV infects cells with :
- (A) CD8
 - (B) CD4
 - (C) CD3
 - (D) CD19

59. Which cytokine suppresses the immune response ?
- (A) IL-2
 - (B) IFN- γ
 - (C) IL-10
 - (D) TNF
60. Autoimmune disease occurs due to :
- (A) Foreign Antigen
 - (B) Auto-reactivity
 - (C) Infection only
 - (D) Failure of tolerance
61. Which complement component forms MAC ?
- (A) C1q-C5
 - (B) C3b-C5
 - (C) C5b-9
 - (D) C2a-C6
62. Positive selection ensures :
- (A) Self-reactivity
 - (B) Mutation
 - (C) MHC restriction
 - (D) Apoptosis
63. Negative selection removes :
- (A) Weakly binding cells
 - (B) B cells
 - (C) All T cells
 - (D) Self-reactive T cells
64. Co-stimulation failure leads to :
- (A) Activation
 - (B) Anergy
 - (C) Apoptosis
 - (D) Mutation
65. Which is a superantigen effect ?
- (A) Specific activation
 - (B) Massive T-cell activation
 - (C) No response
 - (D) Weak response
66. TAP transports peptides into :
- (A) Nucleus
 - (B) Golgi
 - (C) ER
 - (D) Lysosome
67. Which pathway processes endogenous antigen ?
- (A) MHC II pathway
 - (B) Lysosomal pathway
 - (C) Proteasomal pathway
 - (D) Endosomal pathway

68. Somatic hypermutation leads to :
- (A) Increased antibody diversity
 - (B) Decreased specificity
 - (C) Loss of function
 - (D) DNA damage
69. Which cell lacks MHC I and is thus killed by NK cells ?
- (A) Healthy cell
 - (B) Virus-infected cell
 - (C) Tumor cell
 - (D) Both (B) and C)
70. Effector B cells are referred as :
- (A) Memory Cells
 - (B) Cytotoxic T Lymphocytes
 - (C) Stem cells
 - (D) Plasma cells
71. A hapten becomes immunogenic when :
- (A) It binds DNA
 - (B) It binds to lipid
 - (C) It binds a carrier protein
 - (D) It mutates
72. Clonal selection theory explains :
- (A) Mutation
 - (B) Specific immune response
 - (C) Digestion
 - (D) Respiration
73. Chronic inflammation is :
- (A) Short-term
 - (B) Long-term
 - (C) Immediate
 - (D) Temporary
74. Passive immunity provides :
- (A) Long-term protection
 - (B) No protection
 - (C) Immediate protection
 - (D) Memory
75. Vaccination induces :
- (A) Passive immunity
 - (B) Active immunity
 - (C) No immunity
 - (D) Temporary immunity only

76. Autoimmunity is due to
- (A) Molecular mimicry
 - (B) Central tolerance errors
 - (C) Bystander mechanism
 - (D) All of the above
77. Fever is induced by :
- (A) Cytokines
 - (B) DNA
 - (C) RNA
 - (D) Lipids
78. Example of autoimmune disease :
- (A) Diabetes (Type 1)
 - (B) Malaria
 - (C) Tuberculosis
 - (D) Influenza
79. Secondary immune Response is :
- (A) Slower
 - (B) Faster
 - (C) Weaker
 - (D) Absent
80. Primary immune response is :
- (A) Faster
 - (B) Absent
 - (C) Stronger
 - (D) Slower
81. TNF stands for :
- (A) Tumor Necrosis Factor
 - (B) Tissue Necrosis Factor
 - (C) Tumor Neural Factor
 - (D) Transfer Necrosis Factor
82. Lysosomes are involved in :
- (A) MHC I pathway
 - (B) MHC II pathway
 - (C) DNA replication
 - (D) Protein synthesis
83. MHC Class II genes in humans are encoded by :
- (A) DA, DB, DC
 - (B) DP, DQ, DR
 - (C) IL3, IL4, IL5
 - (D) MMP8, MMP10, MMP8

84. Western blot detects proteins with the help of :
- (A) RNA polymerase
 - (B) DNA polymerase
 - (C) Alkaline phosphatase
 - (D) Phospholipase C
85. Enzyme-linked immunosorbent assay (ELISA) detects :
- (A) DNA
 - (B) Lipids
 - (C) RNA
 - (D) Antigen
86. The Fc region binds to :
- (A) Antigen
 - (B) Cell receptors
 - (C) DNA
 - (D) RNA
87. Complement activation is mediated by :
- (A) Fab
 - (B) DNA
 - (C) Fc
 - (D) RNA
88. Class switching changes :
- (A) Specificity
 - (B) Constant region
 - (C) Variable region
 - (D) DNA sequence
89. Hypervariable regions are also called :
- (A) CDRs
 - (B) CH2/CH3 regions
 - (C) Fc regions
 - (D) Constant domains
90. Specificity refers to :
- (A) Speed
 - (B) Ability to detect the correct target
 - (C) Cost
 - (D) Mutation
91. ELISPOT detects :
- (A) DNA
 - (B) Lipids
 - (C) RNA
 - (D) Single-cell cytokine secretion
92. Competitive ELISA is useful for :
- (A) High antigen concentration
 - (B) Low antigen detection
 - (C) DNA
 - (D) RNA

93. The antigen-binding site is located in :
- (A) Constant region
 - (B) Fc region
 - (C) Variable region
 - (D) Stem region
94. Light chains are of the following types :
- (A) Alpha and beta
 - (B) Kappa and lambda
 - (C) Gamma and delta
 - (D) Mu and epsilon
95. Flow cytometry measures :
- (A) Cell properties
 - (B) DNA sequence
 - (C) Protein only
 - (D) RNA
96. Which response is crucial for viral vaccines ?
- (A) Humoral only
 - (B) NK only
 - (C) Complement
 - (D) Cellular (CD8+ T cells)
97. Lymph node paracortex contains :
- (A) B cells
 - (B) T cells
 - (C) RBCs
 - (D) Platelets
98. High endothelial venules are found in :
- (A) Bone marrow
 - (B) Thymus
 - (C) Lymph nodes
 - (D) Liver
99. Herd immunity refers to :
- (A) Individual immunity
 - (B) Population-level protection
 - (C) Passive immunity
 - (D) Innate immunity
100. Hassall's corpuscles are found in :
- (A) Bone marrow
 - (B) Thymus
 - (C) Spleen
 - (D) Liver

(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 छँटना 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।