D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1.

IMMUNOTECHNOLOGY

SECTION A (6 MARKS)

1. Explain about the immune system?
2. Write about the historical background of immunology?
3. Describe the application of tumor antigens?
4. Explain various therapies for curing autoimmune disorders?
5. Explain the mode of action of haptens and adjuvants?
6. Describe the nature and function of lymphoid organ?
7. Describe the structure of MHC class I and II?
8. Explain about the complement activation by lectin pathway?
9. Explain about the mode of response of ADCC?
10. List the ways in which bacteria may cause disease. Why do bacteria cause disease? Does this help the organism in any way?
11. Outline the ways by which viruses cause tissue damage or otherwise cause disease?
12. What are the essential features of antigens?
13. Write in short about epitopes and haptens?
14. Write in short about cell surfaced antigens?
15. Write briefly about respiratory burst?
16. Write in short about neutrophil surface proteins?
17. Write in short about the different types of macrophages?
18. Why do we have both class I and class II MHC molecules? Discuss.
19. Write in short about the basic structure of MHC class and class II?
20. How tumor escapes from the host immune system?
21. Role of eosinophils, basophils, and mast cells in the development of allergic rhinitis and atopic dermatitis
22. List the key characteristics of an acquired (adaptive) immune response
23. Write in short about the inflammatory response?

24. Explain haemotopoesis?
25. Write about the cells participate in phagocytosis?
26. Explain about the lymphocyte homing?
27. Add notes on lymphocyte circulation?
28. Write in short about HLA typing?
29. Lymphatic system – Explain.
30. Write in short about the MHC genes?
31. Describe about the structure of MHC complex?
32. Explain about cell-cell signaling?
33. The gene organization of immunoglobulin superfamily-Explain
34. Write in short about the super antigens?
35. Write in short about the non-peptide bacterial antigens?
36. What are the sub classes of immunoglobulins?
37. What are three major cytokines secreted by macrophages? Explain about their role in immunity
38. Explain about the transcription factors involved in T cell activation?
39. What are the general characteristics of cytokines?
40. What are chemokines? Remember to address the structure and function in the definition. Can they mediate a direct anti-microbial effect? If so, how and under what condition.
41. Describe the steps or immunoglobulin heavy chain class switching from IgM to IgG. Are the events antigen dependent? What are the functional consequences of successful completion to the host?
42. Describe the major pathways to Th1 type T cell responses during an infection?
43. Describe the major antigen processing pathway for presentation during viral infection? Can cells be induced to be better APCS for these antigens? If so, give the mechanism?
44. Which immune system components are more important for protection during secondary exposure to influenza virus? How do they work?
45. What are the similarities between apoptosis and tissue necrosis?

SECTION-B (15 Marks)

46. Explain in detail about polymorphonuclear phagocytic cells?
47. Explain in detail about the structure and function of neutrophil?
48. Give detailed notes on mononuclear phagocytic cells?
49. List the important enzymes found inside the neutrophils? What might happen if a neutrophil released its enzymes into healthy tissues?
50. Write in detail about the molecules secreted by macrophages?
51. Compare the bactericidal mechanisms neutrophils and macrophages?
52. Describe the basic features of glycoproteins of the immunoglobulin superfamily?
53. Immune system – structure and function, innate and acquired immunity, active and passive immunity
54. Basic receptors of the immune cells (BCR, TCR, NKR, FcR)
55. Describe the events that lead to T cell activation in humans following an entry of a pathogen.
56. Explain the concepts of antigen processing and presentation with a suitable example.
57. Explain the mechanisms of pathogenesis of tumor
58. How is IgA secreted across mucosal surfaces?
59. There are three complement pathways – classical, alternative and lectin. How are these different pathways activated?
60. Describe the immunological responses to a bacterial pathogen which has infected a mucosal surface.
61. Describe the mechanisms for antigen processing and presentation via MHC class I and class II molecules to T lymphocytes. How do these different pathways lead to appropriate defences against different types of microorganisms?
62. The uncontrolled activation of complement is deleterious. How is complement activity regulated normally

63. List the roles of complement in immune defense
64. Briefly outline the immunological processes involved in the establishment of immune memory
65. Add detailed notes on primary lymphoid organs?
66. Add detailed notes on secondary lymphoid organs?
67. Explain in detail about MALT, CALT and GALT?
68. Write elaborately about antigens, immunogens, haptens mitogens and adjuvants.
69. Explain about immune responsiveness to various diseases?
70. What are the types of immunoglobulins and explain about it?
71. Describe about the B cell activation and maturation?
72. Describe about the B cell differentiation?
73. Explain about the self and non-self discrimination of immune cells?
74. Outline antigen processing and presentation to TCR
75. Describe the molecular pathways for T cell activation
76. Describe positive and negative selection of T cells
77. Discuss the role of accessory molecules in T cell antigen recognition
78. What is the importance of diacylglycerol and IP3 in T-cell activation?
79. Briefly discuss the collective molecular events called T-Cell activation that lead to biologic function.
80. Explain about the function categories of cytokines?
81. Explain about the cytokines acting as stimulator of haematopoeisis?
82. Explain about the cytokine related diseases
83. Explain about therapeutic uses of cytokines and their receptors?
84. Explain about the cytokines acting as mediators and regulators of adaptive immunity?
85. How do T cells help B cells? Please give at least three different molecules involves in the process and at least two different consequences or B cell response?
86. What are NK cells? Be certain to give two characteristic markers. Give three major functions for the cell type?

87. In a major heavy weight fight, one boxer bites the ear of another boxer and a lot o blood spreads all over both players. How would you determine if either boxer was infected with HIV as a result of the incident?
88. What is fluorescence activated low cytometry (FACS)? Explain how it might be used for diagnosing a specific T cell deficiency.
89. What are differences between apoptosis and tissue necrosis?
90. Explain about the causes, morphology and mechanism of tissue necrosis?
91. What are the causes and mechanism of apoptosis?
92. Explain about tissue repair and wound healing?

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