

KISII UNIVERSITY SPECIAL/SUPPLEMENTARY EXAMINATIONS

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF CLINICAL MEDICINE

PATH111: IMMUNOLOGY

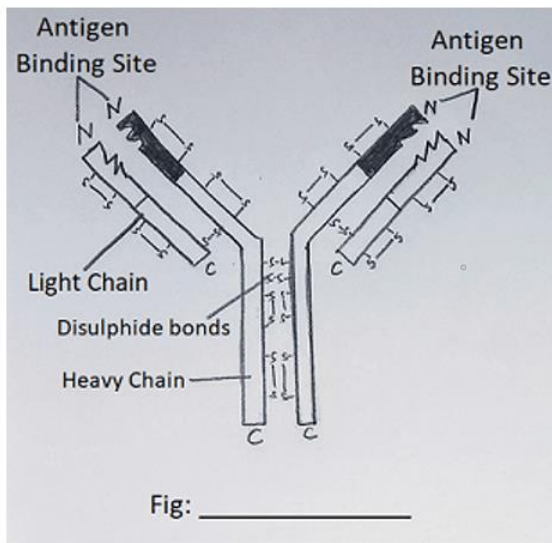
Instructions: Answer all questions in sections A and B, and any two questions in section C

SECTION A (60 Marks)

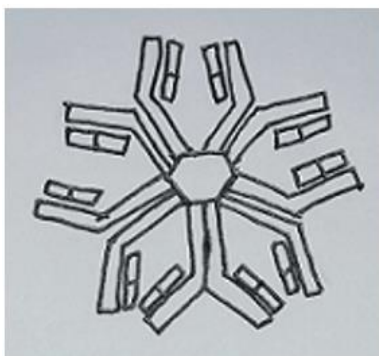
1. The classical pathway of complement is primarily activated by
 - a) Microbial surfaces
 - b) Cytokines
 - c) Antibody
 - d) C3
2. Which of the following are phagocytic cells derived from monocytes
 - a) Neutrophils
 - b) Mast cells
 - c) NK cells
 - d) Macrophages
3. NK cells recognise and kill
 - a) Normal host cells
 - b) Cells with increased expression of MHC-I molecules
 - c) Cells with decreased expression of MHC-I molecules
 - d) Intracellular pathogens
4. Which of the following barriers does not come under innate immunity?
 - a) Physical barrier
 - b) Physiological barrier
 - c) Complex barrier
 - d) Cellular barrier
5. Which of the following barriers are considered to be the first line of defence in our body?
 - a) Physical and Physiological barriers
 - b) Physiological and Cellular barriers
 - c) Cellular and Cytokine barriers
 - d) Physical and Cellular barriers
6. Innate immunity is also called as _____
 - a) Specific immunity
 - b) Inborn immunity
 - c) Acquired immunity
 - d) Adapted immunity

7. Acquired Immunity is not called as _____
 - a) Specific Immunity
 - b) Adapted Immunity
 - c) Humoral Immunity
 - d) Non-specific Immunity
8. Which of the following is not an Anatomic barrier?
 - a) Skin
 - b) Oil and sweat
 - c) Nostril hair
 - d) Mucus and cilia
9. Lysozyme is
 - a) Antiviral
 - b) Antiprotozoal
 - c) Antibacterial
 - d) Antifungal
10. Which of the following are not the Phagocytes of innate immunity?
 - a) Neutrophils
 - b) Macrophages
 - c) RBCs
 - d) Monocytes
11. In innate immunity, complement system functions through _____
 - a) Alternate pathway
 - b) Classical pathway
 - c) Heightened pathway
 - d) Anatomical pathway
12. Interferons are which type of barriers?
 - a) Physical barriers
 - b) Physiological barriers
 - c) Cellular barriers
 - d) Cytokine barriers
13. Which of the following Cellular barriers are involved in Inflammatory reactions?
 - a) Neutrophils
 - b) Basophils
 - c) Eosinophils
 - d) Monocytes
14. Which of the following immunities is also called as Antibody-Mediated Immunity?
 - a) Acquired Immunity
 - b) Cell-Mediated Immunity
 - c) Humoral Immunity
 - d) Innate Immunity

15. Which structure is depicted by the following figure?



- a) Antigen
 - b) Neutrophil
 - c) Antibody molecule
 - d) Basophil
16. Antigenic determinants are _____
- a) Large and complex molecules
 - b) Proteins or carbohydrates
 - c) Specific products of pathogen
 - d) Recognisable sites over antigens
17. Which of the following set of antibodies are responsible for providing Natural Passive Immunity to the foetus?
- a) IgD and IgE
 - b) IgM and IgA
 - c) IgA and IgE
 - d) IgG and IgA
18. Which structure of the antibody is represented by the following figure?



- a) IgA
- b) IgM
- c) IgD
- d) IgG

19. Which of the following is the largest antibody?
- IgA
 - IgG
 - IgM
 - IgE
20. Which of the following statements is not correct regarding IgM antibody?
- Responsible for the initial activation of B-cells
 - It is an effective agglutinator of antigen
 - It makes up 7-10% of our total antibodies
 - It is the last antibody to be released during the primary response
21. Which of the following is not the function of an antibody?
- Lysis
 - Neutralisation
 - Assimilation
 - Precipitation
22. Which of the following antibodies shows Opsonisation?
- IgG
 - IgE
 - IgD
 - IgA
23. Active immunity is due to _____
- Killer T-cells
 - Memory cells
 - Helper T-cells
 - Suppressor T-cells
24. Exogenous supply of antibodies provides which of the following types of immunities?
- Artificial Active Immunity
 - Natural Active Immunity
 - Active immunity
 - Passive Immunity
25. When preformed antibodies are directly injected into the body, they provide which kind of immunity?
- Natural Active immunity
 - Artificial Active Immunity
 - Natural Passive immunity
 - Artificial passive immunity
26. IgA and IgG antibodies provide which of the following kinds of immunity to the infant or foetus?
- Natural Active Immunity
 - Natural Passive Immunity
 - Artificial Active Immunity
 - Artificial Passive Immunity

27. Which of the following mediate the Cell Mediated Immunity?
- a) T-lymphocytes
 - b) Red blood corpuscles
 - c) White Blood cells
 - d) B-lymphocytes
28. Life span of T-cells _____
- a) 4-5 hours
 - b) 4-5 days
 - c) 4-5 weeks
 - d) 4-5 years
29. B-cells produce antibodies in response to the instruction received from _____
- a) Killer T-cells
 - b) Suppressor T-cells
 - c) Memory Cells
 - d) Helper T-cells
30. What does T stand for in T-lymphocytes?
- a) Tonsils
 - b) Thymus
 - c) Tissue
 - d) Thyroid
31. Which of the following cell surfaces do not have Major Histocompatibility complex?
- a) Red Blood Corpuscles
 - b) White Blood Cells
 - c) Helper T-cells
 - d) Killer T-cells
32. What is meant by Apoptosis?
- a) Accidental Cell Death
 - b) Programmed Cell death
 - c) Accidental Cell division
 - d) Programmed Cell division
33. Which region of an antibody is also called a 'Fragment of Crystallization'?
- a) Fc region
 - b) Fab region
 - c) CC region
 - d) NN region
34. What is the approximate weight of Heavy and Light chains respectively?
- a) 50,000 Da and 25,000 Da
 - b) 25,000 Da and 50,000 Da
 - c) 75,000 Da and 25,000 Da
 - d) 75,000 Da and 50,000 Da

35. Which of the following antibodies constitute the largest proportion of the total antibodies present?
- IgA
 - IgM
 - IgG
 - IgE
36. Which of the following is the smallest antibody?
- IgG
 - IgA
 - IgD
 - IgE
37. In which of the following places antibody IgA is not present?
- Vagina
 - Placenta
 - Digestive tract
 - Respiratory tract
38. Which of the following is an Allergy Mediated antibody?
- IgE
 - IgA
 - IgG
 - IgD
39. Which of the following antibodies are present on the surface of B-lymphocytes?
- IgA
 - IgE
 - IgD
 - IgM
40. Which of the following is NOT a secondary lymphoid organ
- Thymus
 - Spleen
 - Mesenteric lymph node
 - Peyers patch
41. Naturally acquired active immunity would be most likely acquired through which of the following processes?
- Vaccination
 - drinking colostrum
 - natural birth
 - infection with disease-causing organism followed by recovery.
42. Which of the following convey the longest-lasting immunity to an infectious agent?
- Naturally acquired passive immunity
 - Artificially acquired passive immunity
 - Naturally acquired active immunity
 - All of these
43. Which of the following substances will not stimulate an immune response unless they are bound to a larger molecule?
- Antigen
 - Virus
 - Hapten
 - Antibody

44. B and T cells are produced by stem cells that are formed in:
- Bone marrow
 - The liver
 - The circulatory system
 - The spleen
45. Which of the following immune cells/molecules are most effective at destroying intracellular pathogens?
- T helper cells
 - B cells
 - Antibodies
 - T cytolytic cells
46. A living microbe with reduced virulence that is used for vaccination is considered:
- A toxoid
 - Dormant
 - Virulent
 - Attenuated
47. B cells that produce and release large amounts of antibody are called:
- Memory cells
 - Basophils
 - Plasma cells
 - Killer cells
48. The specificity of an antibody is due to
- its valence
 - The heavy chains
 - The Fc portion of the molecule
 - The variable portion of the heavy and light chain
49. The ability of the immune system to recognize self-antigens versus nonself antigen is an example of:
- Specific immunity
 - Tolerance
 - Cell-mediated immunity
 - Antigenic immunity
50. If an inactivated virus is introduced in the extracellular milieu near a macrophage, it will be presented on:
- Class II MHC molecule
 - Class I MHC molecule
 - Class III MHC molecule
 - CD1 molecule
51. Which one of the following is the least efficient antigen-presenting cell?
- Macrophages
 - T cells
 - Dendritic cells
 - B cells
52. Which of the following components is not associated with enzymatic activity?
- C1
 - C9
 - C4b2a3b
 - C4b2a

53. Which one of the following is neither C3 nor C5 convertase?
- a) C4bC2a3b
 - b) C2b4a
 - c) C3bBb
 - d) C4b2a
54. Which of the following complement component belongs to the collectin family?
- a) Clr
 - b) C4a
 - c) Clq
 - d) C3b
55. Which of the following fragment of complements will not trigger mast cell degranulation?
- a) C4a
 - b) C3a
 - c) C2a
 - d) C5a
56. The C5 convertase of the alternative pathway is:
- a) C3bBb3b
 - b) C4b2a3b
 - c) C3bBb4a
 - d) C3bBb4b
57. The alternative pathway is initiated by the interaction of _____ with _____
- a) C3; bacterial lipopolysaccharide
 - b) C1; antigen-antibody complex
 - c) C4; factor B
 - d) C3; bacterial mannose residue
58. Which of the following cells is most sensitive to complement-mediated lysis?
- a) Red blood cells
 - b) Hepatocytes
 - c) Endothelial cells
 - d) White blood cells
59. Which of the following anaphylatoxins could be generated only by the classical pathway?
- a) C4a
 - b) C5a
 - c) C3a
 - d) C2a
60. Which of the following is not a component of the mannose-binding pathway?
- a) MASP
 - b) Properdin
 - c) C3
 - d) MBL

SECTION B (60Marks)

61. Briefly explain individual susceptibilities that affect overall ability to resist infections (10marks)
62. Briefly outline the process of phagocytosis (10marks)
63. Explain the biological Consequences of Complement Activation (10marks)
64.
 - a) State the chemical Nature of Antigens (4marks)
 - b) Classify antigens
 - i. Based on their origin (2marks)
 - ii. On the basis of immune response (2marks)
 - c) State any two applications of antigens (2marks).
65. With the aid of a well labelled schematic diagram illustrate the diversity of cells of the immune system (10marks)
66. Discuss any five general functions of antibodies (10marks)

SECTION C (40 Marks)

67. Explain the structure and function of the Major Histocompatibility complex class I and II (20marks)
68. With regards to biochemical factors of Innate immunity discuss Acute-phase proteins and Fibronectins (20marks)
69. Discuss the factors influencing Immunogenicity (20marks)