TUTO 20:
The Lymphatic and Immune Systems

FULL NAME: ……..... Matric No: ……

PROGRAMME: …… Date: …….

True / False (T/F) Questions:

☐ 1. Lymph originates in blood capillaries that pick up tissue fluid.

☐ 2. Red bone marrow is the point of origin of all immune cells of the lymphatic system.

☐ 3. Mucous membranes prevent most pathogens from entering the body because of the stickiness of the mucus and the presence of lysozymes.

☐ 4. Interferons are secreted in response to bacterial infections.

☐ 5. Pus is made of dead neutrophils, macrophages, and other tissue debris from a damaged tissue.

☐ 6. Pyrogens act by increasing the set point for body temperature in the thalamus.

☐ 7. The antigenicity of a molecule is due to specific regions of it called haptens.

☐ 8. Interleukins are chemical signals by which immune cells communicate with each other.

☐ 9. Helper T cells respond only to epitopes attached to MHC proteins.

☐ 10. Cytotoxic T cells respond only to antigens bound to MHC-I proteins.

☐ 11. Clonal selection of T cells happens in the thymus.

☐ 12. Naive T cells can synthesize antibodies.

☐ 13. Humoral immunity takes care of intracellular viruses, whereas cellular immunity takes care of extracellular viruses.

☐ 14. Most Memory B cells are found circulating in the lymph.

☐ 15. Some antibodies against foreign antigens can react to similar self-antigens, causing an autoimmune disease.

Multiple Choice Questions (MCQs):

16. Lymphatic vessels recover about _____ of the fluid filtered by capillaries.

A. 5%
B. 15%
C. 25%
D. 50%
E. 85%

17. Lymph is similar to blood plasma, but very low in _____.

A. protein
B. carbon dioxide
C. metabolic waste
D. electrolytes
E. sodium and potassium

18. Special lymphatic vessels, called lacteals, absorb dietary _____ that are not absorbed by the blood capillaries.

A. water
B. glucose
C. vitamins
D. amino acids
E. lipids

19. The _____ tonsils are the largest, and their surgical removal (tonsillectomy) used to be one of the most common surgical procedures performed in children.

A. adenoid
B. lingual
C. palatine
D. pharyngeal
E. nasopharyngeal

20. Which of the following forces does *not* help lymph to flow?

A. Rhythmic contractions of lymphatic vessels
B. The thoracic pump
C. The skeletal muscle pump
D. The lymphatic node pump
E. Arterial pulsations squeezing lymphatic vessels

21. Which of the following is *not* an example of lymphatic tissue?

A. Peyer patches
B. MALT
C. Lymphatic nodules
D. Macrophages
E. Diffuse lymphatic tissue

22. _____ are the largest of the lymphatic vessels, and they empty into the _____.

A. Lymphatic trunks; collecting ducts
B. Lymphatic trunks; subclavian arteries
C. Lymphatic trunks; subclavian veins
D. Collecting ducts; subclavian veins
E. Collecting ducts; subclavian arteries

23. Immune surveillance is a process in which _____ nonspecifically detect and destroy foreign cells and diseased host cells.

A. T lymphocytes (T cells)
B. reticular cells
C. dendritic cells
D. macrophages
E. natural killer (NK) cells

24. The _____ show(s) a remarkable degree of degeneration (involution) with age.

A. lymph nodes
B. thymus
C. spleen
D. pharyngeal tonsils
E. appendix

25. The only lymphatic organ(s) with afferent lymphatic vessels is(are) the _____.

A. lymph nodes
B. thymus
C. spleen
D. red bone marrow
E. tonsils

26. Removal of the _____ would be more harmful to a one-year-old child than an adult.

A. spleen
B. lymph node
C. thymus
D. appendix
E. palatine tonsil

27. Which of the following does(do) *not* belong to the second line of defense?

A. The macrophage system
B. Natural killer cells
C. Inflammation
D. The gastric juices
E. Interferon and the complement system

28. _____ lacks the capacity to remember a pathogen or react differently to it in the future, whereas _____ utilizes memory cells to adapt to a given pathogen and ward it off more easily in the future.

A. Nonspecific resistance; cytotoxicity
B. Adaptive immunity; nonspecific resistance
C. A natural killer cell; a cytoxic T cell
D. Nonspecific resistance; adaptive immunity
E. Adaptive immunity; specific immunity

29. _____ are found especially in the mucous membrane, standing guard against parasites and allergens.

A. Monocytes
B. Lymphocytes
C. Basophils
D. Neutrophils
E. Eosinophils

30. _____ employ a "respiratory burst" to produce bactericidal chemicals such as hydrogen peroxide (H_2O_2) and hypochlorite (HClO).

A. Neutrophils
B. Basophils
C. Cytotoxic T cells
D. Natural killer cells
E. Suppressor T cells

31. Complement fixation cannot lead to _____.

A. enhanced inflammation
B. opsonization
C. endogenous pyrexia
D. bacterial phagocytosis
E. cytolysis

32. _____ are secreted by cells infected with viruses, alerting neighboring cells and protecting them from becoming infected.

A. Complement system globulins
B. Interferons
C. Granzymes
D. Pyrogens
E. Perforins

33. When an enemy cell is present, a(n) _____ secrete perforins, which bore a hole in the enemy cell membrane.

A. interferon
B. interleukin
C. natural killer cell
D. antibody
E. opsonization

34. A pyrogen is a substance that causes _____.

A. inflammation
B. opsonization
C. complement fixation
D. cytolysis
E. fever

35. The first of a series of neutrophil behaviors in inflammation is _____.

A. chemotaxis
B. margination
C. diapedesis
D. phagocytosis
E. opsonization

36. _____ is *not* a cardinal sign characteristic of inflammation.

A. Impaired use
B. Redness
C. Pain
D. Heat
E. Swelling

37. Basophils of the blood help to get defensive leukocytes to the site quickly by releasing an anticoagulant called _____ and a vasodilator called _____.

A. bradykinin; histamine
B. selectin; prostaglandin
C. histamine; heparin
D. heparin; histamine
E. prostaglandins; selectin

38. Which of these cellular agents does *not* participate in inflammation?

A. Cytotoxic T cells
B. Macrophage
C. Eosinophils
D. Neutrophils
E. Endothelial cells

39. One group of proteolytic enzymes secreted by natural killer (NK) cells is _____.

A. selectins
B. cytokines
C. granzymes
D. perforins
E. interferons

40. Complement C3b protein coats bacteria and stimulates phagocytosis by _____ during a process called _____.

A. lymphocytes and monocytes; opsonization
B. neutrophils and macrophages; cytolysis
C. mast cells and basophils; opsonization
D. mast cells and basophils; cytolysis
E. neutrophils and macrophages; opsonization

41. _____ are antimicrobial proteins.

A. Bradykinins
B. Interferons
C. Cytokines
D. Kinins
E. Prostaglandins

42. One characteristic of the immune response is specificity. This means that _____.

A. immunity starts in defined organs in the body
B. immunity starts in specialized tissues in the body
C. immunity is carried on by a specific group of cells of the immune system
D. immunity is directed against a particular pathogen
E. immunity is carried on by a specific group of tissues of the immune system

43. Vaccination stimulates _____ immunity.

A. natural active
B. artificial active
C. natural passive
D. artificial passive
E. nonspecific

44. Cellular (cell-mediated) immunity is effective against _____.

A. allergens
B. venoms
C. cancer cells
D. extracellular viruses
E. toxins

45. A(n) _____ is the region of the molecule that is recognized by antibodies.

A. epitope
B. antigen
C. hapten
D. major histocompatibility complex (MHC)
E. antibody monomer

46. T cells achieve immunocompetence in the _____.

A. bone marrow
B. bloodstream
C. spleen
D. thymus
E. liver

47. T cells undergo positive selection in the thymus, which means they _____.

A. react against self antigens
B. develop surface antigen receptors
C. remain alive but unresponsive
D. die and macrophages phagocytize them
E. multiply and form clones of identical T cells

48. The serum used for emergency treatment of snakebites stimulates _____ immunity.

A. artificial passive
B. artificial active
C. natural passive
D. natural active
E. artificial specific

49. The majority of T cells of the naive lymphocyte pool wait for the encounter with foreign antigens in the _____.

A. plasma
B. thymus
C. lymphatic tissues
D. lymph
E. blood plasma

50. Which of the following *cannot* act as antigen-presenting cells?

A. Reticular cells
B. Dendritic cells
C. Macrophages
D. B cells
E. T cells

51. Helper T (T_H) cells recognize antigens when they are bound to a(n) _____.

A. hapten
B. immunoglobulin
C. natural killer cell
D. major histocompatibility complex (MHC) protein
E. basophil

52. Antigen-presenting cells usually display processed antigens to T cells in the _____.

A. blood plasma
B. lymph nodes
C. thymus
D. red bone marrow
E. liver

53. Helper T (T_H) cells do *not* _____.

A. secrete cytokines that stimulate clonal selection of B cells
B. secrete cytokines that stimulate clonal selection of cytotoxic T cells
C. secrete cytokines that stimulate macrophage activity
D. secrete inflammatory chemicals
E. secrete fever-producing chemicals

54. _____ participate in both nonspecific resistance and immune response.

A. Memory T (T_M) cells
B. Regulatory T (T_R) cells
C. Natural killer (NK) cells
D. Helper T (T_H) cells
E. Cytotoxic T (T_C) cells

55. Cytotoxic T (T_C) cells are like natural killer (NK) cells because they both _____.

A. secrete interferons
B. secrete granzymes and perforin
C. participate in the immune response
D. participate in nonspecific resistance
E. secrete tumor necrosis factor (TNF)

56. Memory T cells can be up to _____ old.

A. weeks
B. days
C. decades
D. years
E. months

57. Which of the following is something antibodies do *not* do?

A. Link antigen molecules together
B. Neutralize antigens by binding to regions of an antigen that can be pathogenic
C. Bind to enemy cells, thus changing their shape so their complement-binding sites are exposed
D. Differentiate into memory antibodies, which upon reexposure to the same pathogen would mount a quicker attack
E. Bind antigen molecules of two or more enemy cells and stick them together

58. Which is the correct sequence of events in the humoral immune response?

A. Antigen recognition → antigen presentation → differentiation → clonal selection → attack
B. Antigen recognition → antigen presentation → clonal selection → differentiation → attack
C. Antigen presentation → antigen recognition → clonal selection → differentiation → attack
D. Antigen presentation → antigen recognition → clonal selection → attack differentiation
E. Antigen recognition → differentiation → antigen presentation → clonal selection → attack

59. Each immunoglobulin (Ig) has _____ antigen-bonding site(s).

A. two
B. four
C. six
D. one
E. three

60. _____ constitutes about 80% of circulating antibodies in plasma.

A. IgD
B. IgE
C. IgA
D. IgM
E. IgG

61. Which class of immunoglobulin provides passive immunity to the newborn?

A. IgD
B. IgE
C. IgM
D. IgA
E. IgG

62. Before B cells secrete antibodies, they differentiate into _____.

A. stem cells
B. antigen-presenting cells
C. plasma cells
D. T cells
E. macrophages

63. The human immunodeficiency virus (HIV) targets mainly _____.

A. helper T cells
B. B cells
C. plasma cells
D. cytotoxic T cells
E. natural killer cells

64. Most common allergies are the result of _____.

A. autoimmune diseases
B. type IV (delayed) hypersensitivity
C. type III (immune complex) hypersensitivity
D. type II (antibody-dependent cytotoxic) hypersensitivity
E. type I (acute) hypersensitivity

65. Beta cell destruction that causes type 1 diabetes mellitus is a(n) _____.

A. anaphylactic hypersensitivity
B. type IV (delayed) hypersensitivity
C. type III (immune complex) hypersensitivity
D. type II (antibody-dependent cytotoxic) hypersensitivity
E. type I (acute) hypersensitivity

66. A person who is HIV-positive and has a helper T (T_H) cell count lower than _____ has AIDS.

A. 20,000 cells/μL
B. 5,000 cells/μL
C. 1,000 cells/μL
D. 200 cells/μL
E. 50 cells/μL

67. Autoimmune diseases are disorders in which the immune system fails to distinguish _____ from foreign ones.

A. self-immunoglobulins
B. self-antibodies
C. self-antigens
D. self-interleukins
E. self-complement proteins

68. Bronchoconstriction, dyspnea, and widespread vasodilation are all characteristics of _____.

A. local anaphylaxis
B. anaphylactic shock
C. autoimmune disease
D. an HIV infection
E. AIDS