

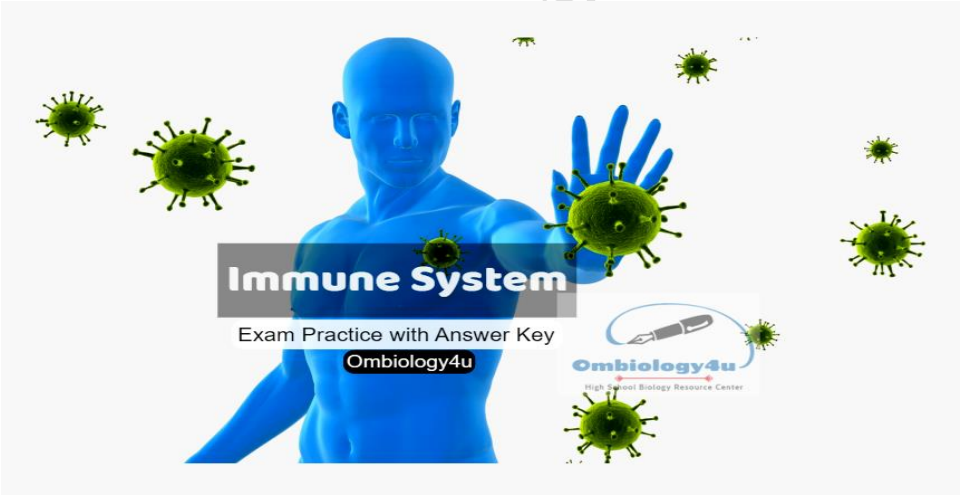
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Biology

Form Four

IMMUNE SYSTEM

Exam Practice with Answer Key



Student name	
Class	
School	
Academic year	

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Part 1: Multiple Choice Questions – Circle the Correct Answer

1. The branch of biology, which involves the study of immune system in all organisms is called ____
   A. Zoology
   B. Microbiology
   C. Immunology
   D. Biotechnology
2. Which of the following is the study of the physiological defense by which the body destroys or neutralizes foreign matter, both living and nonliving things?
   A. Genetics
   B. Immunology
   C. Acquired immunity
   D. Active immunity
3. Non-specific immunity is also known as
   A. Adaptive immunity
   B. Acquired Immunity
   C. Learned immunity
   D. Innate immunity
4. Innate immunity is
   A. Active acquired immunity
   B. Passive acquired immunity
   C. Inborn immunity
   D. Both A and B
5. The body's first line of defense against the invasion of disease-causing germs is
   A. Phagocytes
   B. Inflammatory response
   C. Skin and mucous membranes
   D. Natural killer cells
6. Which of the following is not involved in first line defense?
   A. Mucus membranes
   B. Saliva
   C. Tears
   D. Antibodies
7. Innate immunity is provided by
   A. Antibodies
   B. T-lymphocytes
   C. Phagocytes
   D. B-lymphocytes

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8. An example of a nonspecific chemical barrier to an infection is ……
    A. Unbroken skin
    B. Lysozyme in saliva
    C. Cilia in the respiratory tract
    D. Mucous membranes
9. Which enzyme do saliva and lachrymal fluids contain to destroy bacteria?
    A. Pepsin
    B. Trypsin
    C. Amylase
    D. Lysozyme
10. Which of the following is not involved in non-specific immunity?
    A. Neutrophils
    B. Plasma cells
    C. Natural killer cells
    D. Macrophages
11. Nonspecific immunity includes all of the following except;
    A. Antigen-antibody complementation
    B. Histamine production
    C. Phagocytosis by neutrophils
    D. Gastric juice secretion
12. Which of the following is NOT an innate defense mechanism of the body?
    A. Skin
    B. Fever
    C. Inflammation
    D. Antibody secretion
13. Which of the following is true about non-specific immunity system?
    A. Contains lymphocytes
    B. Has no memory
    C. Identifies the antigen of the pathogen
    D. Develops memory
14. To which type of barriers under innate immunity do saliva in mouth and tears in eye belong
    A. Physical barriers
    B. Physiological barriers
    C. Physical barriers
    D. Cellular barriers

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15. Which cells is involved in body defense?
    A. Neutrophils
    B. Macrophages
    C. Lymphocytes
    D. All of the above
16. Which of the following is a nonspecific barrier defense?
    A. Natural killer cells
    B. Mucous membranes
    C. Macrophages
    D. Complement proteins
17. Histamine or inflammation producing substances are formed by
    A. Macrophages
    B. B-cells
    C. Mast cells
    D. Collagen fibers
18. Which of the following components of the vertebrate immune response occurs first upon invasion by a virus or bacterium?
    A. Activation of killer T lymphocytes
    B. Activation of B lymphocytes
    C. Mobilization of complement proteins
    D. The inflammatory response
19. Which of the following steps is the first step in an inflammatory response?
    A. Endocytosis of the microbe
    B. Release of interleukin-1
    C. Chemotaxis
    D. Exocytosis of the microbial debris
20. Inflammatory reaction is brought by
    A. Plasma cells
    B. Macrophages
    C. Mast cells
    D. Neutrophils
21. The inflammatory response includes all of the following, except
    A. Increased temperature
    B. Increased blood flow
    C. Constriction of blood vessels
    D. Phagocytic attack

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22. Which is not one of the four characteristic symptoms of inflammation?
    A. Redness
    B. Bleeding
    C. Swelling
    D. Pain
23. Inflammatory response in allergy is due to release by mast cells of
    A. Antibodies
    B. Antigens
    C. Histamine
    D. All of the above
24. Which of the following leukocyte is granulocyte?
    A. Lymphocyte
    B. Erythrocyte
    C. Monocytes
    D. Neutrophils
25. Macrophages are derived from
    A. Neutrophils
    B. Lymphocytes
    C. Basophils
    D. Monocytes
26. When a localized area exhibits capillary filtration, hyperemia and swelling, it is an indication that _____
    A. Antibodies are phagocytizing target cells
    B. Fever is developing
    C. Inflammation is occurring
    D. kidneys are filtering blood
27. Which molecules are secreted by macrophages which results in a fever?
    A. Histamine
    B. Antibodies
    C. Pyrogens
    D. Keratin
28. Which cell does NOT have a direct role in phagocytosis?
    A. Neutrophils
    B. Natural killer cells
    C. Macrophages
    D. Eosinophils

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29. What is the immune system's second line of defense against invading microorganisms?
    A. Ingestion of the microorganisms by B-lymphocytes
    B. Ingestion of the microorganisms by phagocytes
    C. Production of antibodies
    D. Production of antigens
30. Which of the following are most numerous in blood;
    A. Lymphocytes
    B. Monocytes
    C. Neutrophils
    D. Basophils
31. Macrophages are large white blood cells that
    A. Give rise to Monocytes
    B. Engulf bacteria and destroy them
    C. Produce proteins called complement proteins
    D. Secrete bacterial-destroying enzymes into the bloodstream
32. All of the following are functions of interferons, EXCEPT that _____
    A. They interfere with viral replication in affected cells
    B. They stimulate B cells for immune response
    C. They mobilize natural killer cells
    D. They slow down the spread of virus
33. How do phagocytic leucocytes help to protect against disease?
    A. They secrete bacterial toxins by exocytosis
    B. They produce antigens to destroy pathogens
    C. They ingest pathogen by endocytosis
    D. They produce antibodies to destroy pathogens
34. Which nonspecific defense cells specialize in attacking cancer cells and virus-infected cells?
    A. Macrophages
    B. Natural killer cells
    C. Plasma cells
    D. Basophils
35. _____ is a molecule that provokes a specific immune response
    A. Acquired immunity
    B. Antibody
    C. Antigen
    D. Active immunity

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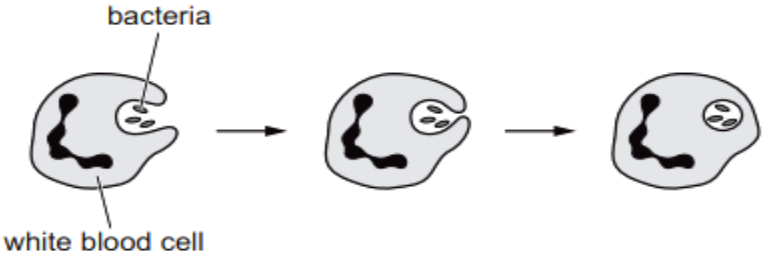
36. The diagram below represents an event that occurs in the blood



Which statement best describes this event?

A. Cell *A* is a white blood cell releasing antigens to destroy bacteria.
B. Cell *A* is a cancer cell produced by the immune system and it is helping to prevent disease.
C. Cell *A* is a white blood cell engulfing disease causing organisms.
D. Cell *A* is protecting bacteria so they can reproduce without being destroyed by predators.

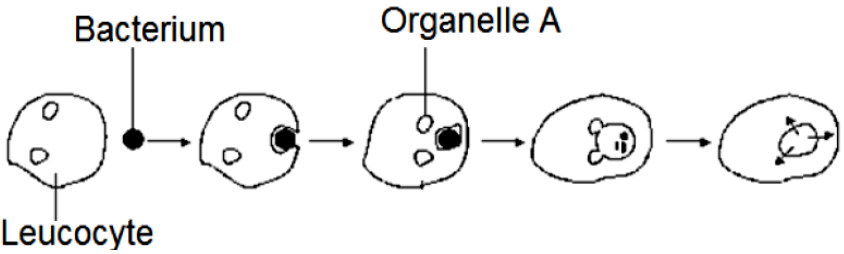
37. The diagram shows one way the body defends itself against pathogens.



What is the name of this defense mechanism?

A. Antibody production
B. Exocytosis
C. Phagocytosis
D. Vaccination

38. The diagram shows one way in which white blood cells protect the body against disease.



Organelle **A** is a

A. Ribosome
B. Lysosome
C. Mitochondria
D. Centeriole

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39. The following statements are about some stages in phagocytosis
    1. Bacteria become surrounded in a phagocytic vacuole
    2. Bacteria release chemicals that attract neutrophils
    3. Lysosomes fuse with the phagocytic vacuole
    4. Neutrophils attach or bind to the bacteria

    Which order defines the correct sequence for phagocytosis?

	→			
A	3	2	4	1
B	2	4	1	3
C	4	1	3	2
D	1	3	2	4

40. Which of the following white blood cells act as scavengers when they engulf and digest pathogens?
    A. T- lymphocytes
    B. Macrophages
    C. Natural killer cells
    D. B lymphocytes
41. Complement proteins work by _____
    A. Phagocytosis of the target cells
    B. Neutralization of antigens
    C. Forming pores in the membrane of virus-infected body cells
    D. Forming pores in the membrane of target cells
42. Which type of molecule is produced by virus-infected cells to communicate to non-infected cells in the presence of a virus?
    A. Antigen
    B. Complement
    C. Pyrogens
    D. Interferon
43. Which of the following are the organs where activation of T and B cells usually occurs?
    A. Bone marrow
    B. Thymus
    C. Lymph nodes
    D. Spleen

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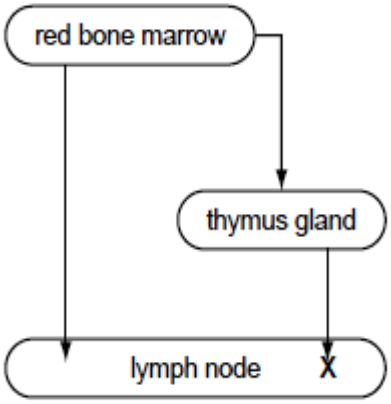
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44. Which of the following is not involved in specific immunity?
    A. T cells
    B. Neutrophils
    C. Plasma cells
    D. B cells
45. Characteristics of acquired immunity is
    A. Differentiation of self and non-self
    B. Specificity of antigen
    C. Retains memory
    D. All of the above
46. Immune responses may be specific or non-specific.
    Which response is a specific immune response?
        A. Inflammation
        B. Phagocytosis
        C. Production of antibodies
        D. Release of histamine
47. A 'non-self' substance that can provoke an immune response is called a(an) ___
    A. Immunoglobulin
    B. Interferon
    C. Antibody
    D. Antigen
48. Both B-cells and T-cells of immune system are produced in
    A. Spleen
    B. Lymph nodes
    C. Bone marrow
    D. Thymus
49. The letter T in T-lymphocytes refers to
        A. Thyroid
        B. Thalamus
        C. Tonsil
        D. Thymus
50. B cell receptors are …
        A. Antigen that mark B cells as self
        B. Antibodies embedded in the B cell plasma membrane
        C. The same for all B cells
        D. Antigens embedded in the B cell plasma membrane

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51. Which of the following lymphocytes leave the bone marrow and collect in the thymus gland where they mature into?
    A. B lymphocytes
    B. Phagocytes
    C. T lymphocytes
    D. Macrophages
52. Without _____ there is no adaptive immune response.
    A. Plasma cells
    B. T-lymphocytes
    C. Natural killer cells
    D. B-lymphocytes
53. Which of the following cells is involved in cell-mediated immunity?
    A. Mast cells
    B. Neutrophils
    C. T cells
    D. B cells
54. The diagram shows the relationship between the red bone marrow, the thymus gland and the lymph nodes.



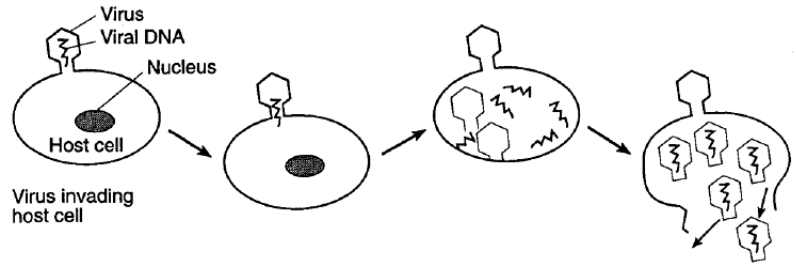
What does **X** represent?
    A. Antibody
    B. B-lymphocytes
    C. Macrophages
    D. T-lymphocytes
55. During infection T-cells interact with
    A. Erythrocytes
    B. B-cells
    C. Basophils
    D. Neutrophils

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56. Which cells involve humoral immunity?
    A. T-cells
    B. Killer cells
    C. B-cells
    D. Stem cells
57. The cell-mediated immune response involves …
    A. Erythrocytes
    B. Cytotoxic cells
    C. B-lymphocytes
    D. Neutrophils
58. What is the function of the plasma cells during an immune response?
    A. To engulf bacteria
    B. To kill virus-infected body cells
    C. To develop into memory cells
    D. To secrete antibodies
59. Which of the following best describes the difference in how B cells and Cytotoxic T cells respond to invaders?
    A. B cells kill virus directly; Cytotoxic T cells kill virus infected cells
    B. B cells kill cells infected with pathogens; Cytotoxic T cells remember pathogens and produce antibodies
    C. B cells confer active immunity; Cytotoxic T cells confer passive immunity
    D. B cells remember pathogens and produce antibodies; Cytotoxic T cells kill cells that are infected with pathogens.
60. Which statement below is characteristic of a secondary humoral response?
    A. It results in less memory cell circulation
    B. It secretes less antibodies than primary response
    C. It occurs much more rapidly than a primary response
    D. It results in less antibody secretion
61. B-lymphocytes combat bacterial and viral infections by secreting antibodies into the blood and lymph fluid, providing what type of immunity?
    A. Cell mediated
    B. Humoral
    C. Nonspecific
    D. Antigenic
62. Leukemia is a disease of the
    A. Liver
    B. Heart
    C. Bone marrow
    D. Islets of langerrhans

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63. Viral activity is represented in the following diagram.



Invading the host cell enables the virus to

A. Obtain nutrients
B. Increase its size
C. Reproduce
D. Synthesize needed oxygen

64. When a body cell is infected by a pathogen, which describes a correct immune response?

A. Killer T cells punch holes in infected cells, releasing antibodies
B. Killer T cells release cytokines, infected body cells release antibodies
C. Memory cells release antibodies, killer T cells secrete cytokines
D. T helper cells release cytokines, plasma cells release antibodies

65. The Cytotoxic T cells recognize antigen in association with _____

A. MHC class II
B. MHC class III
C. MHC class I
D. Both MHC I and MHC II

66. Cytotoxic T cells kill target cells _____

A. Through insertion of perforins into the membrane of a target cells
B. By secreting antibodies
C. Through neutralizing toxins
D. By phagocytosis

67. Which of the following best describes an antigen presenting cells?

A. An immune cell with MHC class II protein on its cell surface
B. When a cell has an affinity for Cytotoxic T-cell
C. A neutrophils that has ingested a bacteria
D. A macrophage which interacts with a helper T cell with the aid of CD4 receptor

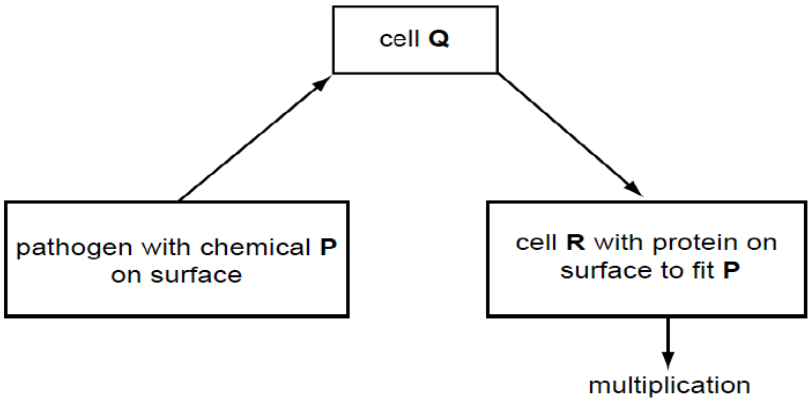
68. Memory cells are formed from

A. Monocytes
B. T-lymphocytes
C. Helper T- lymphocytes
D. B-lymphocytes

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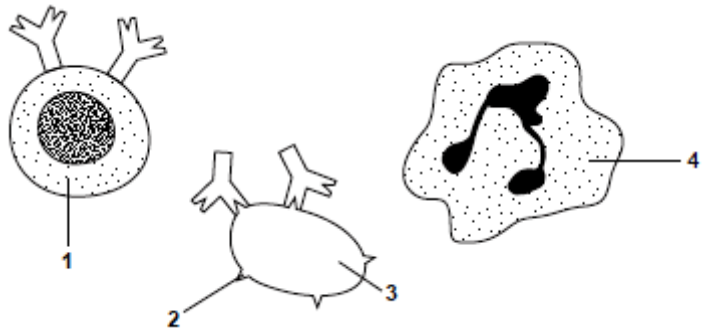
69. The diagram shows part of the immune response.



What are **P**, **Q** and **R**?

	P	Q	R
A	antibody	phagocyte	T helper cell
B	antigen	T helper cell	B-lymphocyte
C	antibody	T helper cell	phagocyte
D	antigen	B-lymphocyte	T helper cell

70. The diagram shows different elements concerned with the immune response in humans.



What are the parts numbered to **1** to **4**?

	1	2	3	4
A	lymphocyte	antigen	pathogen	phagocyte
B	phagocyte	antibody	pathogen	lymphocyte
C	phagocyte	antibody	lymphocyte	pathogen
D	pathogen	antigen	lymphocyte	phagocyte

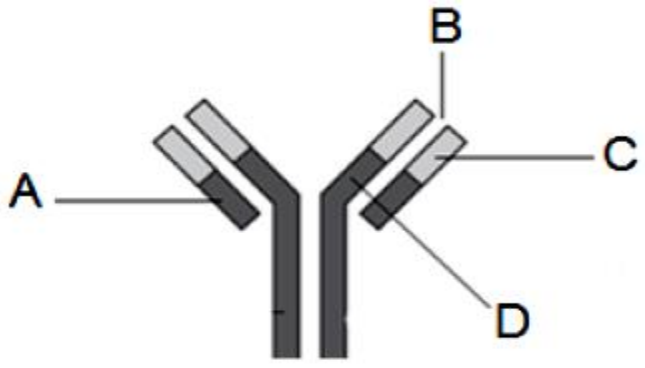
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71. What is the function (s) of plasma cells during an immune response?
    1. Destroy cancer cells
    2. Differentiate into memory cells
    3. Secrete antibodies
        A. 2 only
        B. 3 only
        C. 2 and 3 only
        D. 1, 2 and 3
72. Antibodies are formed by
        A. T-cells
        B. Stem cells
        C. B-cells
        D. Killer cells
73. Chemically an antibody is
        A. Lipoprotein
        B. Protein
        C. Lipid
        D. Nucleoprotein
74. A cell which defends against body cells in which viruses are reproducing is
        A. Suppressor T cell
        B. Inducer T cell
        C. Memory cell
        D. Cytotoxic T cell
75. Which immune cell is able to respond quickly after any subsequent encounter with the same antigen?
        A. Plasma cell
        B. Antigen-presenting cell
        C. Helper T cell
        D. Memory cell
76. Antigens are found
        A. Inside nucleus
        B. On nuclear envelope
        C. Inside bone marrow
        D. On cell surface
77. Which one helps in differentiation of T cells of immune system?
        A. Cortiosol
        B. Steroid
        C. Thymosin
        D. Thyroxin

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78. An antigen is ….
    A. A chemical messenger that is released by virus infected cells
    B. A lymphocyte responsible for cell-mediated immunity
    C. Something that coats inside lungs, causing infection
    D. A protein or other molecule that is recognized as non-self
79. Which cells differentiate into memory cells in the immune response?
    1. T-lymphocytes
    2. Natural killer cells
    3. B-lymphocytes
    A. 1 only
    B. 2 only
    C. 1 and 3 only
    D. 2 and 3 only
80. Antibodies function …
    A. To directly destroy foreign organ draft
    B. To mark invading organisms for destruction
    C. To kill intracellular virus
    D. In nonspecific immune response
81. The antigen binding site of antibody is the _____
    A. Constant region
    B. Heavy chain
    C. Variable region
    D. Light chain
82. Antibodies function _____
    A. To kill intra-cellular viruses
    B. To directly destroy foreign organ grafts
    C. To lyse virus-infected body cells
    D. To mark invading organisms for destruction
83. The diagram below shows the structure of an antibody. Which part is the variable region of the antibody?



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84. Which class of antibodies is abundant in body secretions?
    A. IgM
    B. IgA
    C. IgG
    D. IgE
85. Which of the following **Ig** is involved in mediating allergic reactions
    A. IgG
    B. IgM
    C. IgA
    D. IgE
86. Opsonins are the antibodies that;
    A. Cause agglutination
    B. Lead to neutralization
    C. Mark the antigens
    D. Burst the pathogens
87. Which is most abundant immunoglobulin
    A. IgA
    B. IgD
    C. IgG
    D. IgM
88. Active immunity means
    A. Resistance developed before disease
    B. Resistance developed after disease
    C. Increased heartbeat
    D. Increased flow of blood
89. Immunity acquired after an infection is
    A. Passive immunity
    B. Active immunity
    C. Innate immunity
    D. Artificial passive immunity
90. Passive immunity is
    A. Acquired through natural overt or latent infection
    B. Acquired through vaccination
    C. Acquired through readymade antibodies
    D. Acquired by activating immune system of the body

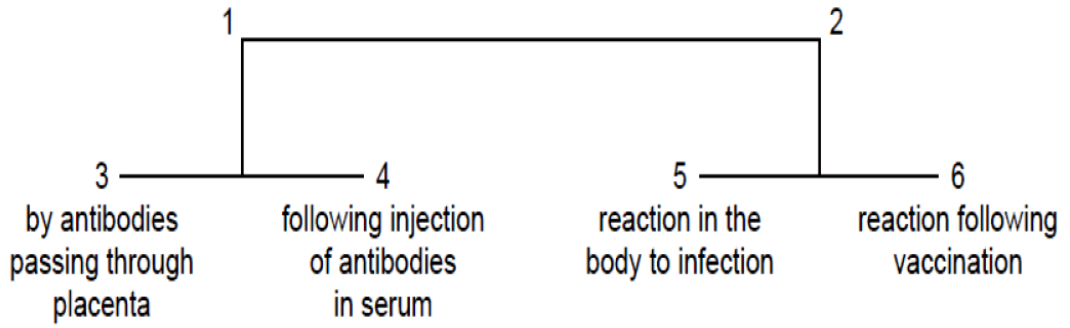
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91. During an outbreak of a very infectious disease, vulnerable people need an intermediate protection. Which type of immunity would be given to those people?

	natural	artificial
active	**A**	**B**
passive	**C**	**D**

92. _____ is an immunity developed from antibodies or antitoxins provided from external source through injection
    A. Artificial active immunity
    B. Natural passive immunity
    C. Natural active immunity
    D. Artificial passive immunity
93. Which one of the following provides natural passive immunity?
    A. Milk powder
    B. Colostrums
    C. Water with sugar
    D. Vaccination
94. The numbers on the diagram after different types of immunity.



Which term is correct for each of these numbers?

	1	2	3	4	5	6
A	active	passive	natural	artificial	natural	artificial
B	active	passive	artificial	natural	artificial	natural
C	passive	active	natural	artificial	natural	artificial
D	passive	active	artificial	natural	artificial	natural

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95. Which one of the following examples includes active immunity?
    1. Immunity acquired when baby actively consumes its mother's milk
    2. Protection acquired when a person recovers from an infection
    3. Immunity acquired when specific antibodies are injected to resist certain disease such as tetanus
    4. Application of antivenin to a person suffering from snake bite

    A. 1 only
    B. 2 only
    C. 2, 3, and 4
    D. All of the above

96. The advantage of a naturally acquired active immunity is that it
    A. Is long lasting, sometimes for life
    B. Can develop without exposure to antigen
    C. Produces antibodies against a range of infective agents
    D. Provides antibodies immediately after first time of exposure to a particular bacterium

97. The first breast milk produced by the mother for a new-born baby contains antibodies.
    What do these antibodies provide?
    A. Artificial active immunity
    B. Artificial passive immunity
    C. Natural active immunity
    D. Natural passive immunity

98. To prevent a disease, dead bacteria may be injected into the body.
    What type of immune response is produced?

	natural	active
A	no	no
B	no	yes
C	yes	no
D	yes	yes

99. What is the immune response in which antibodies come from another person who has encountered the antigen, called?
    A. Active immunity
    B. Natural active immunity
    C. Passive immunity
    D. Innate immunity

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100. Which of the following immunity developed after contracting pathogens inside the body?
   A. Passive immune
   B. Active immune
   C. Inherited immune
   D. Vaccination

101. Short lived immunity acquired by fetus/infant from mother through placenta/milk is
   A. Active immunity
   B. Passive immunity
   C. Cellular immunity
   D. Innate nonspecific immunity

102. Active immunity may be produced by
   A. Breast feeding
   B. Receiving a vaccine
   C. Receiving gamma antibody injection
   D. Receiving antitoxin injection

103. A person will gain long-term immunity after
   A. Administration of a vaccine
   B. The inflammatory response to a bee sting
   C. An injection of immunoglobulin
   D. The passage of antibodies from their mother

104. Treatment of snake bite by antivenin is providing
   A. Artificial acquired active immunity
   B. Artificial acquired passive immunity
   C. Natural acquired passive immunity
   D. Specific natural immunity

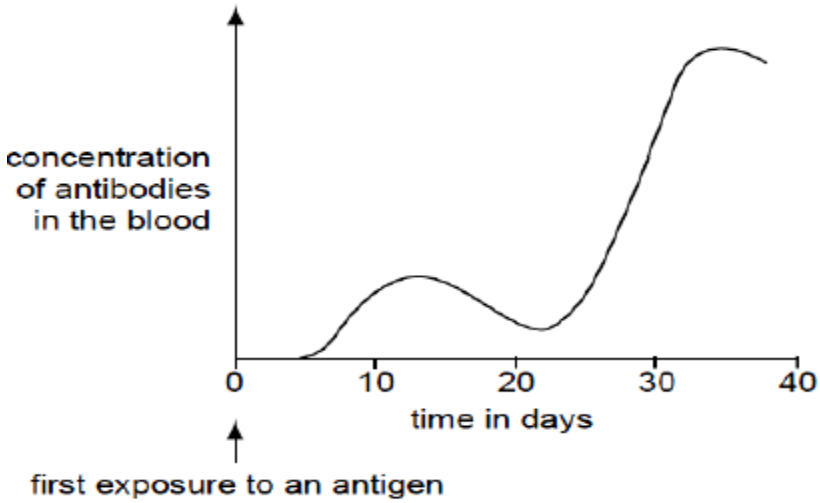
105. The type of immunity gained when an antigen enters the body naturally and the body's lymphocytes produce antibodies
   A. Artificial passive immunity
   B. Artificial active immunity
   C. Natural passive immunity
   D. Natural active immunity

106. The response to the first invasion of the pathogen is called
   A. Secondary response
   B. Primary response
   C. Memory cells
   D. Immune

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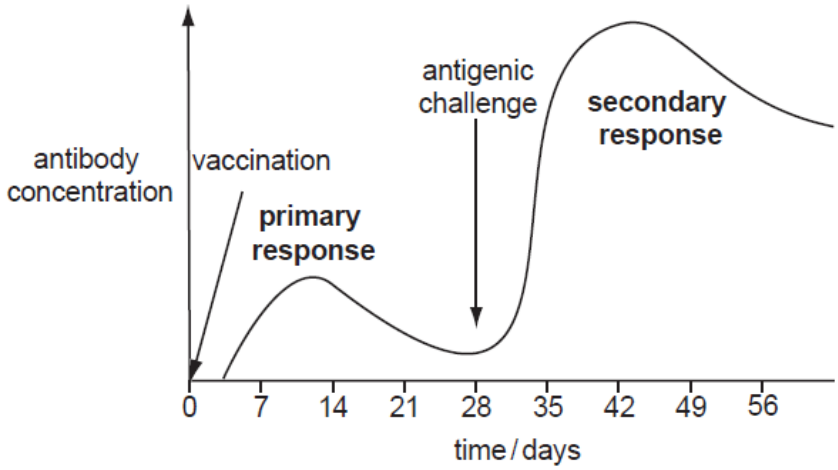
107. The graph shows the amount of antibody produced in response to an antigen.



From the graph, which statement is correct?

A. Memory cells for this antigen are present in the body within 20 days.
B. It takes 25 days to achieve active immunity.
C. The second exposure to the antigen occurred on day 25.
D. T helper cells are activated on day 12.

108. The graph shows the level of antibody in serum following vaccination and a challenge with the same antigen 28 days later.

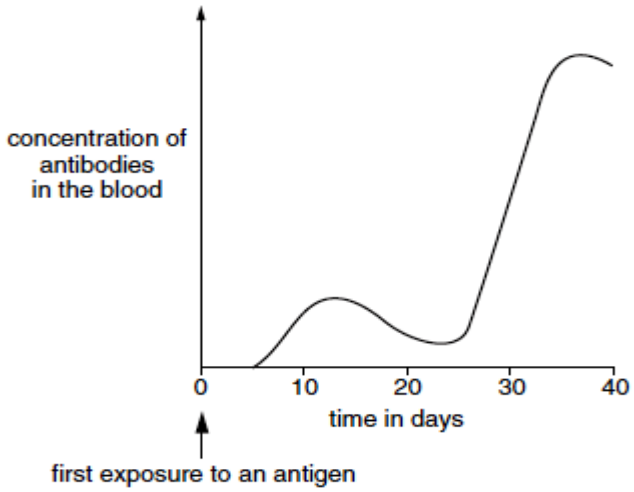


Which cells account for the difference in antibody concentration at the peak of the primary and secondary responses?

A. B-lymphocytes
B. Memory cells
C. Phagocytes
D. T-lymphocytes

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109. The graph shows the amount of antibody produced in response to an antigen.



From the graph, which statement is correct?

A. It takes 25 days to achieve active immunity
B. Memory cells for this antigen are present in the body within 20 days
C. A second exposure to the antigen occurred on day 20
D. T helper cells are activated on day 20

110. Active artificially acquired immunity is a result of _____

A. Contact with a pathogen
B. Vaccination
C. Antibodies passed on from mother to baby through breast milk
D. Antibodies passed on from mother to fetus through the placenta

111. Artificially acquitted passive immunity refers to immunity from

A. Transfer of antibodies from mother to fetus across the placenta
B. Injection of antibodies
C. Injection of the antigen in a vaccination
D. Recognition of an antigen by B cells

112. Which type of immunity occurs as a result of the ingestion of antibodies by an infant through its mother's milk?

	artificial	natural
active	**A**	**B**
passive	**C**	**D**

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113. Resistance developed in an individual as a result of antigenic stimulus is
   A. Natural immunity
   B. Active acquired immunity
   C. Passive acquitted immunity
   D. Artificial immunity

114. Which is a correct description of different types of immunity?

	natural active	natural passive	artificial active	artificial passive
A	antibodies cross the placenta	injection of antigens	injection of antibodies	no memory cells form
B	memory cells form	antibodies cross the placenta	injection of antigens	injection of antibodies
C	injection of antibodies	memory cells form	antibodies cross the placenta	injection of antigens
D	injection of antigens	injection of antibodies	no memory cells form	antibodies cross the placenta

115. Which method of gaining immunity can be described as natural active immunity?
   A. Feeding on colostrums
   B. Inhaling the chicken pox virus
   C. Injection with antibodies
   D. Through the placenta

116. For a period after its birth, a human baby is immune to most of the diseases to which its mother is immune.
Which form of immunity does this represent?
   A. Artificial active
   B. Artificial passive
   C. Natural active
   D. Natural passive

117. Vaccination protects a person from disease because it helps to
   A. Increase RBCs count
   B. Correct body healing system
   C. Produce antibodies
   D. Help in better digestion

118. Vaccination provides
   A. Natural immunity
   B. Active immunity
   C. Passive immunity
   D. Both A and B

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119. What causes the measles vaccine to be less effective in children from less economically developed countries?
   A. Their diet does not contain enough carbohydrate
   B. Their diet does not contain enough protein
   C. They are carriers of the disease
   D. They rapidly become of the disease

120. The main four ways of being immune are
   1. Having memory cells after an infection
   2. Having memory cells after being injected with dead bacteria
   3. Being injected with antibodies
   4. Receiving antibodies from breast milk

   Which line in the table correctly shows the types of immunity?

	natural active	artificial active	natural passive	artificial passive
A	1	2	3	4
B	1	2	4	3
C	2	1	3	4
D	2	1	4	3

121. What is the change called in which antigen causes our immune system not to recognize it?
   A. Antigenic drift
   B. Antigenic shift
   C. Antigenic movement
   D. Antigenic revealing

122. When a B cell encounters antigen to which it is targeted, it divides rapidly and produce
   A. Plasma cells and killer cells
   B. Plasma cells and inducer T cells
   C. Plasma cells and memory cells
   D. Plasma cells and helper cells

123. Which type of surface marker is present on macrophage in your body?
   A. B receptor
   B. T receptor
   C. MHC-I
   D. MHC-II

124. Activated helper T cells release regulatory molecules called
   A. Histamines
   B. Antibodies
   C. Lymphokines
   D. Complement

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125. AIDS is such a deadly disease because AIDS virus attacks and destroys
   A. T cells
   B. B cells
   C. Mast cells
   D. Memory cells
126. Precursors of macrophages are called
   A. Killer cells
   B. B cells
   C. Monocytes
   D. Plasma cells
127. The immune response is terminated or decreased by
   A. Inducer T cells
   B. Helper T cells
   C. Cytotoxic T cells
   D. Suppressor T cells
128. What holds together the four polypeptide chains of an antibody?
   A. Light chains
   B. Disulphide bonds
   C. Heavy chains
   D. MHC proteins
129. Cytotoxic T cells are called into action by
   A. Presence of interleukin-1
   B. Presence of interleukin-2
   C. Presence of neutrophils
   D. Decrease in the number of antibodies
130. What function does lymphatic system serve in the immunity system?
   A. Return of fluid to blood circulation
   B. Transport of fatty acids in the body
   C. Filtration of foreign matter in lymph nodes
   D. T-lymphocytes travel mainly through the lymphatic system

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ANSWER SHEET FOR PART ONE: MULTIPLE CHOICE QUESTIONS

1	2	3	4	5	6	7	8	9	10
C	**B**	**D**	**C**	**C**	**D**	**C**	**B**	**D**	**B**
11	12	13	14	15	16	17	18	19	20
A	**D**	**B**	**B**	**D**	**B**	**C**	**D**	**C**	**C**
21	22	23	24	25	26	27	28	29	30
C	**B**	**C**	**D**	**D**	**C**	**C**	**B**	**B**	**C**
31	32	33	34	35	36	37	38	39	40
B	**B**	**C**	**B**	**C**	**C**	**C**	**B**	**B**	**B**
41	42	43	44	45	46	47	48	49	50
D	**D**	**C**	**B**	**D**	**C**	**D**	**C**	**D**	**B**
51	52	53	54	55	56	57	58	59	60
C	**B**	**C**	**D**	**B**	**C**	**B**	**D**	**D**	**C**
61	62	63	64	65	66	67	68	69	70
B	**C**	**D**	**C**	**C**	**A**	**D**	**B**	**D**	**A**
71	72	73	74	75	76	77	78	79	80
B	**C**	**B**	**D**	**D**	**D**	**C**	**D**	**C**	**B**
81	82	83	84	85	86	87	88	89	90
C	**D**	**C**	**B**	**D**	**C**	**C**	**B**	**B**	**C**
91	92	93	94	95	96	97	98	99	100
D	**D**	**B**	**C**	**B**	**A**	**D**	**B**	**C**	**B**

101	102	103	104	105	106	107	108	109
B	**B**	**A**	**B**	**D**	**B**	**C**	**B**	**A**
110	111	112	113	114	115	116	117	118
B	**B**	**D**	**B**	**B**	**B**	**D**	**C**	**B**
119	120	121	122	123	124	125	126	127
B	**B**	**B**	**C**	**D**	**C**	**A**	**C**	**D**
128	129	130						
B	**B**	**D**						

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Part 2: Structured Questions –Answer all the below questions

Question 1

(a) Define the below terms

i. Immunity

……
……
……..

ii. Immunology

……
……..

iii. Antigen

……
……..

iv. Immune response

……
……..

(b) What is the difference between specific and non-specific defense mechanisms?

……
……..
……

Question 2

(A) State any role played by the below terms in the first line of defense mechanisms

i. Saliva

……

ii. Hydrochloric acid

……

iii. Blood clotting

……..

iv. Sebum

……

v. Tears

……

vi. Sweet

……..

vii. Urine

……

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(B) In the below table, identify the main differences between specific and non-specific immunity in terms of their given characteristics.

Character	Specific immunity	Non-specific immunity
Memory		
Speed of response		
Specificity		

Question 3

Explain the difference between the first and second line of defenses

……
……
……
……..

Question 4

White blood cells protect the body from micro-organisms that cause diseases.

i) Describe the role of phagocytes in defense against diseases?
……
……

ii) State two ways by which white blood cells fight against micro-organisms
……
……

iii) Identify the group of white blood cells that are known as granulocytes
……
……

iv) Distinguish between granulocytes and agranulocytes
……
……
……
……

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Question 5

Match the following description in column A with its terms in column B

Description	Answer	Terms
1. Resistance to infection by a particular pathogen obtained by having the disease or being injected with a weakened pathogen		A) Lymphocytes
2. A Long lasting type of immunity		B) Active-immunity
3. A type of white blood cells that produce antibody		C) Phagocytes
4. Resistance to infection by a particular pathogens by acquiring antibodies from another organism		D) Antibody
5. A type of white blood cell that ingests and digests bacteria		E) Passive immunity
6. A protein produced by lymphocytes, which attaches specific antigen		F) Memory cells

Question 6

Differentiate into specific and nonspecific immune system of the below terms in the box

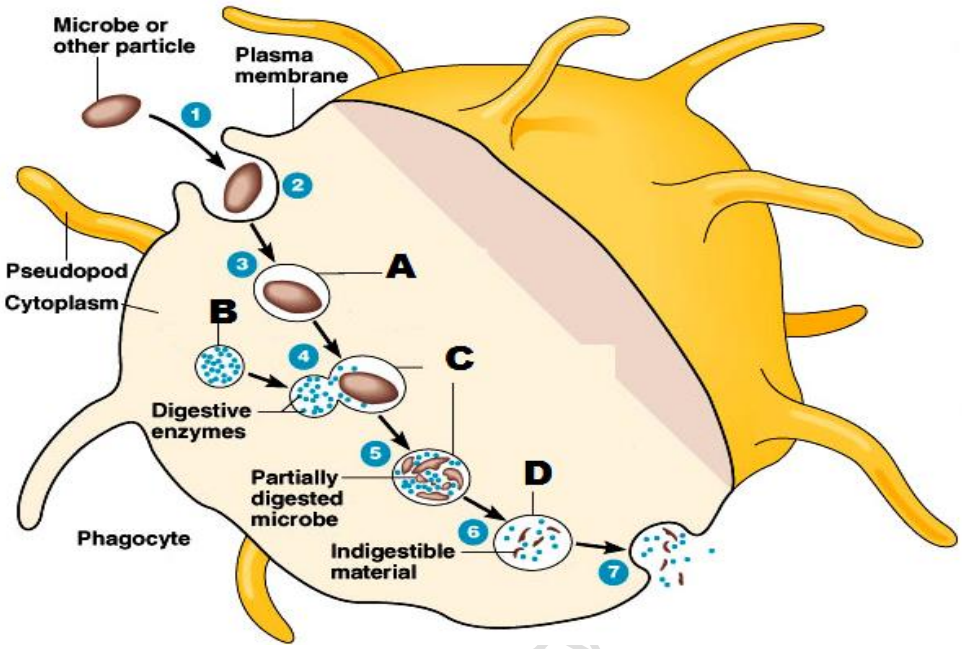
Skin and mucus membranes, nasal hairs, lymphocytes, stomach acid, phagocytes, mucus in the respiratory tract, memory cells, Cytotoxic T cells, antibody, saliva, B-cells, tears, T-cells, urine, blood clotting, Helper T-cells

Specific immunity	**Non-specific immunity**

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Question 7

Study the diagram about mechanisms of phagocytosis and answer the questions



(a) Define phagocytosis

……

……

(b) Name the labeled parts A, B, C, and D

A. ……..

B. ……..

C. ……..

D. ……..

(c) List the six steps or mechanisms of phagocytosis

……

……

……

(d) Fill in the blanks with their suitable terms in the table below (20 marks)

Natural killer cells,	Neutrophils,	Mast cells,	Sebum,	Interferon,	Macrophages,
Interleukin-1,	Tears,	Perforin,	Complement system		

(i) …….. release histamine

(ii) ……kill and lyse virus infected body cells

(iii) ……engulf and destroy microbes

(iv) ……..…….make a hole on pathogen to rush in water and lyse

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(v) …… present antigen of the engulfed pathogen to the lymphocytes
(vi)…….. is a protein released by NK cells for inserting and forming a pore of the membrane of the target cell
(vii) …….. wash away irritating substances and microbes
(viii) ……..released by virus infected cells and reduces spread of virus.
(ix)……is a regulatory molecule that raises the body temperature by stimulating the hypothalamus.
(x) …… inhibits the growth of certain microbes on the skin.

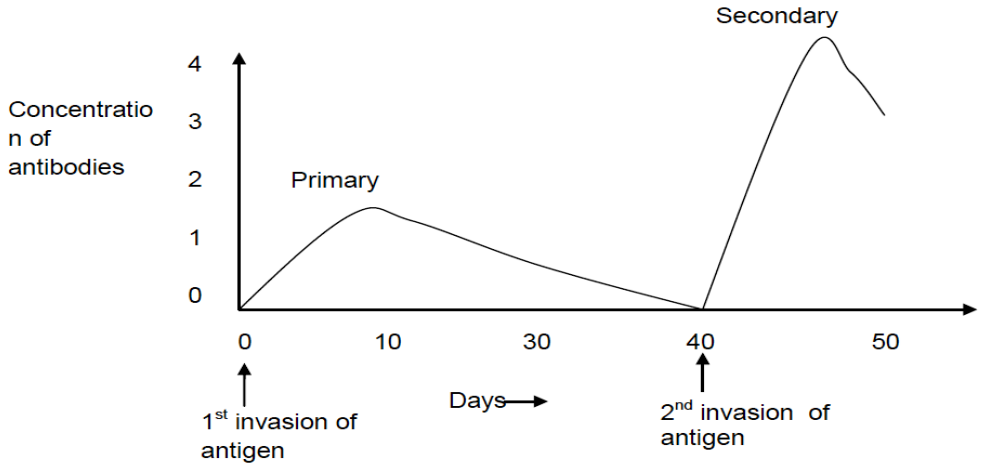
Question 8

Describe the role of phagocytes and lymphocytes in defense against pathogens.

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……
……

Question 9

The graph below represents the concentration of antibodies during two invasions of antigen into an individual



(a) Which period of invasion has more antibodies production?

……
……

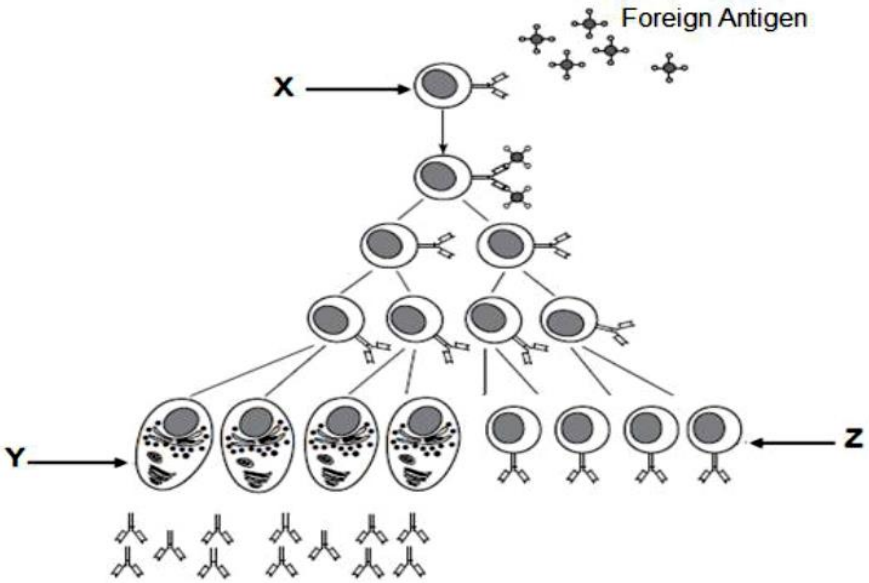
(b) Why is secondary response faster than the primary response?

……
……

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Question 10

A biologist predicted how the body's immune system responds to infection. A the below diagram is about the summary of the biologist's theory.



i) Name cell **X** as either B-lymphocytes or T-lymphocytes? Explain your choice

……
……
……

ii) Complete the table below by naming and stating the function of cell **Y** and cell **Z**

……
……

iii) State two ways in which the immune response of cell **Z** would different to that of cell **X**

……
……

iv) What is meant by inflammation? State three examples of inflammation symptoms

……
……
……
……

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Question 11

Distinguish between the following terms

(a) Active and passive immunity

……
……
……
……

(b) Artificial active and artificial passive immunity

……
……
……
……

(c) Natural active and natural passive immunity

……
……
……
……

Question 12

Describe the function of the following types of antibodies

(a) IgM

……
……

(b) IgG

……
……

(c) IgA

……
……

(d) IgE

……
……

Question 13

(a) Explain the difference between the terms antibody and antigen

……
……
……
……

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(b) What is vaccination?

……
……

(c) Explain how vaccination can control disease

……
……

Question 14

(a) Explain how memory T cells provide immunity against future infections

……
……

(b) Describe how antibodies destroy antigens and the substances produced by antigens

……
……

(c) Some early transplant organs for patients experienced complications because their immune system responded to 'invading' cells that originated in another body. Which immune system cells would increase?

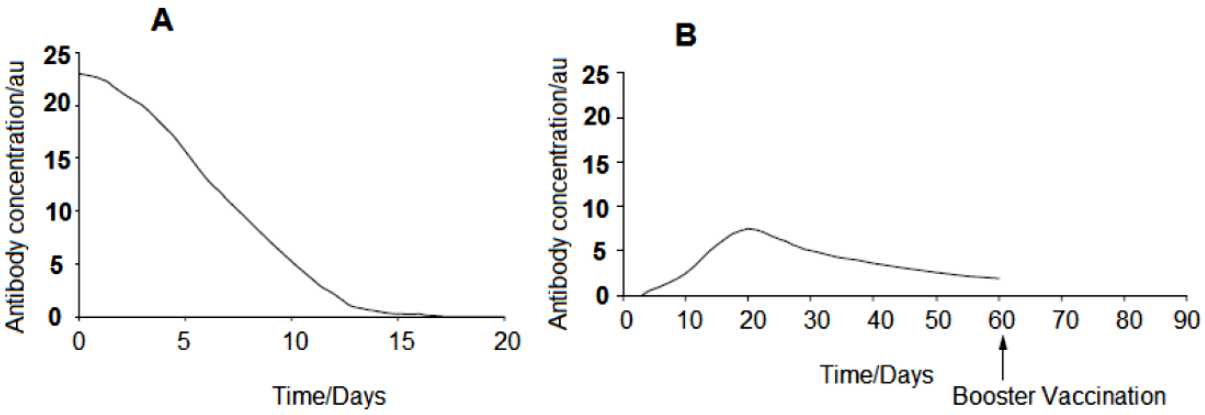
……
……

(d) Draw a diagram that illustrates how harmful cells in the body are destroyed by phagocytes

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Question 17

Two people took part in a study to find out the effectiveness of two types of immunization. Person **A** received an injection of antibodies against tetanus and person **B** received a tetanus vaccination. Over few new weeks, the blood from these two people was analyzed for the presence of antibodies to tetanus. The results are shown in figures **A** and **B** below.



(a) Name the types of immunity shown by figures **A** and **B**

A …… **B** ……

(b) Explain why the antibody concentration in person **A**

(i) Decreased during the study period

……

(ii) Did not increase

……

(c) **Sketch** on figure **B**, what you would expect to happen to the antibody concentration if person **B** received a booster vaccination at **day 60.**

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(d) Explain why, in this investigation, the experiments had to measure the concentration of antibodies to tetanus rather than the concentration of all antibodies in the blood in **A** and **B**

.....
.....
.....

Question 18

(A) Describe the role of the following immune cells in immunity system

Immune cells	Role
Plasma cells	
Memory cells	
T-helper cells	
Cytotoxic T cells	
Inducer T cells	
Neutrophils	
Mast cells	
Dendritic cells	
Basophils	
Eosinophils	
Natural killer cells	

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(B) State any four functions of macrophages in immunity system

……
……
……

(C) Identify the role of the below terms in immunity system

(i) Histamine

……

(ii) Interleukin-1

……

(iii) Interleukin-2

……

(iv) Interferons

……

(v) Complement proteins

……

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Question 19

(a) Describe the difference between cellular immunity and antibody mediated immunity

……
……
……
……

(b) After a pathogen gains an entry to the body, it is often a number of days immune system begins to control it. Why is this so?

……
……
……
……

(c) What are the two main types of antigen presenting cells in immunity system?

……

(d) What do antigen presenting cells do?

……
……

(e) How do T-cells get activated?

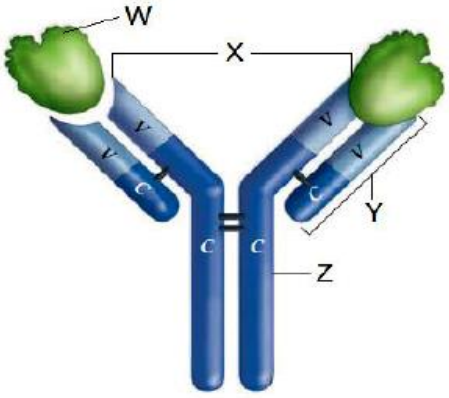
……
……

(f) What is the role of helper T-cells in the adaptive immune response?

……
……

Question 20

The diagram below represents the structure of antibody



(A) What do **V** and **C** stand for in the diagram?

……

(B) Name the antibody parts **X, Y** and **Z.**

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……..

(C) Identify the molecule labeled **W**

……..

(D) State the function of the part **X** and explain its characteristics

……

……

……..

(E) List any four function of the antibody

……

……

……

Question 21

(a) What is fever?

……

……

(b) Which chemical initiates fever?

……

(c) Explain the role of fever in the immune system

……

……

……

……

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