



100 Most Important MID TERM SHORT QUESTIONS

COURSE

BT302 IMMUNOLOGY



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TO GET MAXIMUM MARKS



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MINE DETAILS



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**BS BIOLOGICAL
SCIENCES TEAM**

100 MOST IMPORTANT SHORT QUESTIONS

1. WHAT IS IMMUNITY?

Answer: Immunity is the resistance against infectious diseases. It is the ability of the body to recognize and eliminate foreign substances such as pathogens and protect the host from disease.

2. WHAT ARE THE TWO MAJOR TYPES OF IMMUNITY?

Answer: Immunity is divided into innate immunity and adaptive immunity. Innate immunity is non-specific and immediate, whereas adaptive immunity is antigen-specific and possesses memory.

3. WHAT ARE THE MAJOR COMPONENTS OF INNATE IMMUNITY?

Answer: Innate immunity consists of anatomical barriers, humoral components such as complement proteins and cytokines, and cellular components including neutrophils, macrophages, and NK cells.

4. DEFINE COMPLEMENT SYSTEM.

Answer: Complement proteins are major humoral components of innate immunity. Their activation leads to opsonization, inflammation, and destruction of pathogens.

5. WHAT PATHOLOGICAL CONDITIONS ARE ASSOCIATED WITH COMPLEMENT ACTIVATION?

Answer: Activated complement proteins can cause acute inflammatory response, capillary dilatation, edema, bronchoconstriction, and mast cell degranulation leading to allergic reactions.

6. WHAT ARE PRIMARY LYMPHOID TISSUES?

Answer: Primary lymphoid tissues are involved in the generation and maturation of lymphocytes. Therefore, they are also called generative or central lymphoid tissues.

7. NAME THE PRIMARY LYMPHOID ORGANS.

Answer: Bone marrow and thymus are the primary lymphoid organs. Bone marrow is involved in B-cell maturation, whereas thymus is responsible for T-cell maturation.

8. *WHAT ARE SECONDARY LYMPHOID TISSUES?*

Answer: Secondary lymphoid tissues provide sites for interaction between antigens and lymphocytes to generate specific immune responses. They are also called peripheral lymphoid tissues.

9. *NAME THE SECONDARY LYMPHOID ORGANS.*

Answer: Secondary lymphoid organs include lymph nodes, spleen, tonsils, adenoids, Peyer's patches, and appendix. These organs provide continuous surveillance against foreign agents.

10. *WHAT ARE HEMATOPOIETIC STEM CELLS?*

Answer: Hematopoietic stem cells are precursor cells located primarily in bone marrow that give rise to all immune cells through lymphoid and myeloid lineages.

11. *WHAT CELLS ORIGINATE FROM LYMPHOID LINEAGE?*

Answer: Lymphoid lineage gives rise to B lymphocytes, T lymphocytes, and natural killer (NK) cells. B cells further differentiate into plasma cells.

12. *WHAT CELLS ARISE FROM MYELOID LINEAGE?*

Answer: Myeloid lineage gives rise to monocytes, macrophages, neutrophils, basophils, mast cells, and megakaryocytes, which subsequently form platelets.

13. *WHAT IS LYMPHOCYTE RECIRCULATION?*

Answer: Lymphocyte recirculation is the continuous movement of lymphocytes between blood and secondary lymphoid organs. Approximately 1–2% of lymphocytes recirculate every hour.

14. *WHAT IS PRIMING OF LYMPHOCYTES?*

Answer: Priming is the process by which lymphocytes become activated after encountering their specific antigen within lymphoid tissues. Activated lymphocytes are called primed lymphocytes.

15. DEFINE CLONAL SELECTION THEORY.

Answer: Clonal selection theory states that antigens select lymphocyte clones possessing appropriate receptors. The selected clones proliferate and produce effector cells with identical specificity.

16. STATE THE FIRST PRINCIPLE OF CLONAL SELECTION THEORY.

Answer: Each lymphocyte bears a single type of receptor with a unique specificity for a particular antigenic determinant.

17. WHAT IS NEUTRALIZATION?

Answer: Neutralization is the process by which antibodies bind to pathogens or toxins and prevent their attachment to target cells, thereby inhibiting infection.

18. WHAT IS OPSONIZATION?

Answer: Opsonization occurs when antibodies coat pathogens and facilitate their uptake and destruction by phagocytic cells through Fc receptor interaction.

19. HOW DO ANTIBODIES ACTIVATE COMPLEMENT?

Answer: Antibody-mediated complement activation results in lysis of certain bacteria and viruses. Complement component C3b also enhances phagocytosis through opsonization.

20. HOW ARE INTRACELLULAR PATHOGENS CONTROLLED?

Answer: Intracellular pathogens are controlled by cell-mediated immunity provided by T lymphocytes because antibodies are ineffective against intracellular organisms.

21. WHAT IS THE ROLE OF CYTOTOXIC T LYMPHOCYTES?

Answer: Cytotoxic T lymphocytes provide immune protection against pathogens residing within the cytosol of host cells, such as viruses.

22. WHAT IS THE FUNCTION OF HELPER T LYMPHOCYTES?

Answer: Helper T lymphocytes are effective against pathogens residing inside vesicles of host cells, such as *Mycobacterium tuberculosis*.

23. DEFINE IMMUNOGEN.

Answer: An immunogen is a substance responsible for inducing a specific immune response. It stimulates antibody production or cellular immunity.

24. DEFINE ANTIGEN.

Answer: An antigen is a substance that has the ability to react with the products of a specific immune response, such as antibodies or lymphocyte receptors.

25. DEFINE HAPTEN.

Answer: A hapten is a small molecule that is non-immunogenic by itself but can react with immune products. It becomes immunogenic only when coupled to a carrier molecule.

26. WHAT IS AN EPITOPE OR ANTIGENIC DETERMINANT?

Answer: An epitope is the specific portion of an antigen that combines with the products of a specific immune response, such as antibodies or antigen receptors.

27. DEFINE ANTIBODY.

Answer: An antibody is a specific protein generated in response to an immunogen that reacts specifically with an antigen. It is also called an immunoglobulin.

28. HOW DOES FOREIGNNESS INFLUENCE IMMUNOGENICITY?

Answer: The immune system normally discriminates between self and non-self-molecules. Therefore, only foreign molecules are usually immunogenic.

29. *HOW DOES MOLECULAR SIZE AFFECT IMMUNOGENICITY?*

Answer: Generally, larger molecules are more immunogenic than smaller ones because they possess more antigenic determinants capable of stimulating immune responses.

30. *HOW DOES CHEMICAL COMPOSITION INFLUENCE IMMUNOGENICITY?*

Answer: Chemically complex substances are usually more immunogenic. Antigenic determinants are formed by primary, secondary, tertiary, or quaternary structures of molecules.

31. *HOW DOES PHYSICAL FORM AFFECT IMMUNOGENICITY?*

Answer: Particulate antigens are generally more immunogenic than soluble antigens, and denatured antigens are often more immunogenic than native forms.

32. *WHAT IS THE ROLE OF DEGRADABILITY IN IMMUNOGENICITY?*

Answer: Easily phagocytosed antigens are generally more immunogenic because antigen processing and presentation are necessary for T-cell activation.

33. *HOW DO GENETIC FACTORS AFFECT IMMUNOGENICITY?*

Answer: Genetic differences among individuals determine their ability to respond to certain antigens due to variations in antigen receptors and antigen presentation mechanisms.

34. *HOW DOES AGE INFLUENCE IMMUNOGENICITY?*

Answer: Very young and elderly individuals often exhibit reduced immune responsiveness, resulting in weaker responses to immunogens.

35. *HOW DOES ANTIGEN DOSE AFFECT IMMUNOGENICITY?*

Answer: An optimal dose of immunogen induces the best immune response. Extremely high or low doses may fail to produce an effective response.

36. *HOW DOES THE ROUTE OF ADMINISTRATION AFFECT IMMUNOGENICITY?*

Answer: Subcutaneous administration generally induces stronger immune responses than intravenous or intragastric routes. Different routes can alter the nature of the response.

37. *WHAT ARE ADJUVANTS?*

Answer: Adjuvants are substances that enhance immune responses to immunogens. Their use may sometimes cause side effects such as fever and inflammation.

38. *WHICH BIOMOLECULES ARE THE BEST IMMUNOGENS?*

Answer: Proteins are generally the most effective immunogens. They may exist as pure proteins, glycoproteins, or lipoproteins.

39. *DESCRIBE THE IMMUNOGENICITY OF POLYSACCHARIDES.*

Answer: Pure polysaccharides and lipopolysaccharides are good immunogens and can effectively stimulate immune responses.

40. *WHY ARE NUCLEIC ACIDS POOR IMMUNOGENS?*

Answer: Nucleic acids are generally poorly immunogenic but may become immunogenic when single-stranded or associated with proteins.

41. *WHAT IS THE IMMUNOGENIC NATURE OF LIPIDS?*

Answer: Lipids are generally non-immunogenic, although they may function as haptens when attached to carrier molecules.

42. *WHAT ARE T-CELL DEPENDENT ANTIGENS?*

Answer: T-cell dependent antigens require T-cell help for B-cell activation. These antigens are usually proteins containing multiple different epitopes.

43. *WHAT ARE T-CELL INDEPENDENT ANTIGENS?*

Answer: T-cell independent antigens activate B-cells without T-cell assistance. They are generally non-protein, polysaccharide antigens with repetitive epitopes.

44. *WHAT ARE SUPERANTIGENS?*

Answer: Superantigens activate T-cells in an exaggerated polyclonal manner, unlike conventional antigens that induce oligoclonal T-cell responses.

45. *GIVE EXAMPLES OF BACTERIAL SUPERANTIGENS.*

Answer: Examples include Staphylococcal enterotoxin, exfoliative toxin, and toxic shock syndrome toxin (TSST), which cause food poisoning and toxic shock syndrome.

46. *WHAT IS A HAPTEN-CARRIER CONJUGATE?*

Answer: A hapten-carrier conjugate consists of a non-immunogenic hapten covalently linked to an immunogenic carrier molecule, enabling an immune response.

47. *WHAT ARE PAMPS?*

Answer: Pathogen-associated molecular patterns (PAMPs) are molecular structures present on pathogens, such as lipopolysaccharides and flagellar proteins, recognized by innate immune cells.

48. *WHAT ARE PRRS?*

Answer: Pattern recognition receptors (PRRs) are receptors on innate immune cells that recognize PAMPs and initiate immune responses against pathogens.

49. *WHICH RECEPTOR RECOGNIZES LIPOPOLYSACCHARIDE (LPS)?*

Answer: Toll-like receptor 4 (TLR-4) recognizes lipopolysaccharide and activates macrophages during innate immune responses.

50. *WHICH RECEPTOR RECOGNIZES FLAGELLIN?*

Answer: Toll-like receptor 5 (TLR-5) recognizes flagellin present on bacterial flagella and promotes macrophage activation.

51. *WHAT ARE IMMUNOGLOBULINS?*

Answer: Immunoglobulins are glycoproteins produced by plasma cells in response to immunogens. They specifically react with antigens and are commonly called antibodies.

52. WHAT ARE THE BASIC STRUCTURAL UNITS OF AN ANTIBODY?

Answer: An antibody molecule consists of two identical heavy chains and two identical light chains linked together by disulfide bonds to form a Y-shaped structure.

53. NAME THE TYPES OF LIGHT CHAINS PRESENT IN ANTIBODIES.

Answer: Antibodies contain two types of light chains: kappa (κ) and lambda (λ). An individual antibody molecule contains either κ or λ light chains but not both.

54. NAME THE TYPES OF HEAVY CHAINS PRESENT IN ANTIBODIES.

Answer: Heavy chains include Gamma (γ), Mu (μ), Alpha (α), Delta (δ), and Epsilon (ϵ), corresponding to IgG, IgM, IgA, IgD, and IgE classes respectively.

55. WHAT ARE VARIABLE REGIONS IN ANTIBODIES?

Answer: Variable regions are amino acid sequences present at the amino-terminal ends of heavy and light chains that determine antigen-binding specificity.

56. WHAT ARE CONSTANT REGIONS IN ANTIBODIES?

Answer: Constant regions are relatively conserved portions of immunoglobulins responsible for biological functions such as complement activation and Fc receptor binding.

57. WHAT IS THE HINGE REGION OF AN ANTIBODY?

Answer: The hinge region provides flexibility to antibody molecules, allowing the antigen-binding sites to interact efficiently with epitopes located at varying distances.

58. WHAT ARE HYPERVARIABLE REGIONS?

Answer: Hypervariable regions are highly diverse amino acid sequences within variable regions that directly participate in antigen recognition and binding.

59. *WHAT ARE COMPLEMENTARITY DETERMINING REGIONS (CDRS)?*

Answer: CDRs are specific hypervariable segments within antibody variable regions that determine antigen-binding specificity by forming the antigen-binding site.

60. *WHAT IS A PARATOPE?*

Answer: A paratope is the antigen-binding site present on an antibody molecule that specifically interacts with an epitope on an antigen.

61. *WHAT IS THE FAB FRAGMENT?*

Answer: Fab (Fragment antigen binding) is the portion of an antibody responsible for antigen recognition and binding. Each antibody contains two Fab fragments.

62. *WHAT IS THE FC FRAGMENT?*

Answer: Fc (Fragment crystallizable) is the constant region of the antibody responsible for biological activities such as complement fixation and binding to Fc receptors.

63. *WHAT IS ANTIBODY VALENCY?*

Answer: Valency refers to the number of antigen-binding sites present on an antibody molecule. It determines the antibody's binding capacity.

64. *WHAT IS THE VALENCY OF IGG?*

Answer: IgG is a monomeric antibody containing two antigen-binding sites; therefore, its valency is two.

65. *WHAT IS THE VALENCY OF IGM?*

Answer: IgM exists mainly as a pentamer and possesses ten antigen-binding sites, giving it a valency of ten.

66. *WHICH IMMUNOGLOBULIN IS THE MOST ABUNDANT IN SERUM?*

Answer: IgG is the most abundant immunoglobulin in serum and constitutes approximately 75% of total serum immunoglobulins.

67. WHICH IMMUNOGLOBULIN CAN CROSS THE PLACENTA?

Answer: IgG is the only immunoglobulin class capable of crossing the placenta and providing passive immunity to the fetus.

68. WHICH IMMUNOGLOBULIN IS PRODUCED FIRST DURING PRIMARY IMMUNE RESPONSE?

Answer: IgM is the first antibody produced during the primary immune response against an antigen.

69. WHAT IS THE MAJOR IMMUNOGLOBULIN PRESENT IN MUCOSAL SECRETIONS?

Answer: IgA is the predominant immunoglobulin found in secretions such as saliva, tears, colostrum, and intestinal secretions.

70. WHICH IMMUNOGLOBULIN IS INVOLVED IN ALLERGIC REACTIONS?

Answer: IgE mediates immediate hypersensitivity reactions and plays an important role in allergic responses and defense against parasitic infections.

71. WHAT IS THE FUNCTION OF IGD?

Answer: IgD functions primarily as a membrane-bound receptor on mature B lymphocytes and participates in B-cell activation.

72. DEFINE AFFINITY.

Answer: Affinity is the strength of binding between a single antigenic determinant (epitope) and a single antigen-binding site (paratope) of an antibody.

73. DEFINE AVIDITY.

Answer: Avidity is the overall strength of binding between multivalent antigens and multivalent antibodies. It is influenced by the valency of both antigen and antibody.

74. *WHAT IS THE EQUIVALENCE POINT IN ANTIGEN-ANTIBODY REACTIONS?*

Answer: The equivalence point is the stage where antigen and antibody are present in equal proportions, resulting in the formation of a detectable lattice structure.

75. *WHAT IS AGGLUTINATION REACTION?*

Answer: Agglutination reactions are antigen-antibody reactions in which particulate antigens react with specific antibodies to form visible clumps called agglutinates.

76. *WHAT IS HEMAGGLUTINATION?*

Answer: Hemagglutination reactions are antigen-antibody reactions in which antigens are present on the surface of red blood cells (RBCs), resulting in visible clumping of RBCs.

77. *WHAT IS QUALITATIVE HEMAGGLUTINATION?*

Answer: Qualitative hemagglutination is used to determine the presence of antigens or antibodies in serum. Blood group typing (ABO and Rh) is a common example.

78. *WHAT IS QUANTITATIVE HEMAGGLUTINATION?*

Answer: Quantitative hemagglutination is used to determine the quantity of antibodies or antigens in serum by measuring antibody titer.

79. *WHAT IS ANTIBODY TITER?*

Answer: Antibody titer is the lowest concentration of antibody causing agglutination or the maximum dilution of serum that still produces agglutination.

80. *STATE THE APPLICATIONS OF AGGLUTINATION REACTIONS.*

Answer: Agglutination reactions are used for blood group determination (ABO and Rh) and diagnosis of bacterial infections such as typhoid fever using the Widal test.

81. *WHAT ARE PRECIPITATION REACTIONS?*

Answer: Precipitation reactions are antigen-antibody reactions in which soluble antigens react with antibodies to form visible precipitates in a medium such as agar.

82. *WHAT ARE PRECIPITINS?*

Answer: Precipitins are antibodies that react with soluble antigens to produce precipitation reactions resulting in visible precipitates.

83. *WHAT IS SINGLE IMMUNODIFFUSION?*

Answer: Single immunodiffusion, also called radial immunodiffusion, is a precipitation reaction in which antibody is incorporated into agar while antigen diffuses from the well to form a precipitation ring.

84. *WHAT IS THE PRINCIPLE OF RADIAL IMMUNODIFFUSION?*

Answer: The diameter of the precipitation ring formed is directly proportional to the concentration of antigen present in the patient's serum.

85. *WHAT IS THE APPLICATION OF RADIAL IMMUNODIFFUSION?*

Answer: Radial immunodiffusion is used to determine serum immunoglobulin levels such as IgA, IgG, and IgM.

86. *WHAT IS DOUBLE IMMUNODIFFUSION?*

Answer: Double immunodiffusion is a precipitation reaction in which both antigen and antibody diffuse separately through agar and react at the equivalence point to form visible precipitates.

87. *STATE THE APPLICATIONS OF DOUBLE IMMUNODIFFUSION.*

Answer: Double immunodiffusion is used for qualitative analysis of complex antigen mixtures and for checking the purity of isolated serum proteins.

88. *WHAT IS COMPLEMENT FIXATION TEST (CFT)?*

Answer: Complement Fixation Test is an antigen-antibody reaction detected based on the ability of immune complexes to fix or consume complement proteins.

89. *WHAT IS THE PRINCIPLE OF COMPLEMENT FIXATION TEST?*

Answer: In CFT, complement proteins are fixed by antigen-antibody complexes. Pre-sensitized RBCs with anti-RBC antibodies are used as indicators of the reaction.

90. *HOW IS A POSITIVE COMPLEMENT FIXATION TEST INTERPRETED?*

Answer: Absence of RBC lysis indicates complement fixation by antigen-antibody complexes, suggesting the presence of antigen and a positive CFT result.

91. *HOW IS A NEGATIVE COMPLEMENT FIXATION TEST INTERPRETED?*

Answer: Lysis of RBCs indicates no complement fixation by antigen-antibody complexes, suggesting absence of antigen and a negative CFT result.

92. *WHAT IS THE APPLICATION OF COMPLEMENT FIXATION TEST?*

Answer: Complement Fixation Test is used for determining gonococcal antibodies present in serum.

93. *WHAT IS ELISA?*

Answer: Enzyme-Linked Immunosorbent Assay (ELISA) is a solid-phase immunoassay that detects antigens or antibodies based on enzyme-mediated substrate utilization.

94. *WHAT IS DIRECT ELISA?*

Answer: Direct ELISA is used to detect unknown antibodies in patient serum using known antigens coated on a solid surface and enzyme-labeled antibodies.

95. *WHAT IS INDIRECT (SANDWICH) ELISA?*

Answer: Indirect or Sandwich ELISA is used to detect unknown antigens by trapping them between two specific antibodies, one of which is enzyme-linked.

96. WHAT IS THE ROLE OF SUBSTRATE IN ELISA?

Answer: The enzyme substrate, usually hydrogen peroxide, reacts with the enzyme to produce a color change whose intensity reflects antigen or antibody concentration.

97. STATE THE APPLICATIONS OF ELISA.

Answer: ELISA is used for detecting Hepatitis B surface antigen (HBsAg), anti-HCV antibodies, and measuring serum cytokines such as IL-1 and TNF- α .

98. WHAT IS ANTIBODY FORMATION?

Answer: Antibody formation is the immune response against an antigen or immunogen that results in the production of specific antibodies by plasma cells.

99. WHAT ARE PLASMA CELLS?

Answer: Plasma cells are specialized B lymphocytes that secrete antibodies. They are therefore called antibody-secreting cells.

100. WHAT ARE THE GENERAL CHARACTERISTICS OF ANTIBODY RESPONSES?

Answer: Antibody responses exhibit self/non-self-discrimination, memory, and specificity. These characteristics ensure effective protection against foreign antigens.

MOST IMPORTANT EXTRA REVISION QUESTIONS

1. DIFFERENTIATE BETWEEN IMMUNOGEN AND ANTIGEN.

Immunogen	Antigen
An immunogen is a substance capable of inducing a specific immune response.	An antigen is a substance that can react with the products of an immune response.
It stimulates the production of antibodies or sensitized lymphocytes.	It may or may not induce an immune response.
All immunogens are antigens.	All antigens are not necessarily immunogens.

Example: Proteins used in vaccines.	Example: Haptens can act as antigens but are not immunogenic alone.
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2. **COMPARE T-DEPENDENT AND T-INDEPENDENT ANTIGENS.**

T-dependent Antigens	T-independent Antigens
Require T-helper cell assistance for B-cell activation.	Do not require T-cell help for B-cell activation.
Usually proteins with multiple different epitopes.	Usually non-protein antigens such as polysaccharides.
Produce strong memory responses.	Generally, do not induce immunological memory.
Cause class switching (IgM to IgG, IgA, IgE).	Mainly induce IgM production.
Produce long-lasting immunity.	Produce short-lived immunity.

3. **DIFFERENTIATE BETWEEN AFFINITY AND AVIDITY.**

Affinity	Avidity
Strength of binding between a single epitope and a single antigen-binding site.	Overall strength of binding between multivalent antigens and multivalent antibodies.
Involves one antigen-antibody interaction.	Involves multiple antigen-antibody interactions.
Depends on the fit between epitope and paratope.	Influenced by the valency of both antigen and antibody.

4. **COMPARE PRIMARY AND SECONDARY IMMUNE RESPONSES.**

Primary Response	Secondary Response
Occurs after first exposure to antigen.	Occurs after subsequent exposure to the same antigen.
Predominantly IgM antibodies are produced.	Mainly IgG antibodies are produced.

Longer lag phase (5–7 days).	Shorter lag phase due to memory cells.
Antibodies have lower affinity.	Antibodies have higher affinity due to affinity maturation.
Less persistent response.	More rapid and long-lasting response.

5. **EXPLAIN THE ROLE OF PLASMA CELLS.**

Answer:

Plasma cells are specialized B-lymphocytes formed after antigen recognition by B-cell receptors. They are called antibody-secreting cells because they synthesize and release large amounts of specific antibodies against antigens.

6. **COMPARE DIRECT AND SANDWICH ELISA.**

Direct ELISA	Indirect (Sandwich) ELISA
Detects unknown antibodies in patient serum.	Detects unknown antigens in patient serum.
Known antigen is coated on solid phase.	Known antibody is coated on solid phase.
Enzyme-labeled antibody is used for detection.	Unknown antigen is trapped between two antibodies.
Used for antibody estimation.	Used for antigen estimation.

7. **DIFFERENTIATE BETWEEN AGGLUTINATION AND PRECIPITATION REACTIONS.**

Agglutination Reactions	Precipitation Reactions
Occur with particulate antigens.	Occur with soluble antigens.
Produce visible clumps called agglutinates.	Produce visible precipitates in medium.
Antibodies involved are called agglutinins.	Antibodies involved are called precipitins.
Examples: ABO blood grouping, Widal test.	Examples: Radial immunodiffusion, double immunodiffusion.

8. EXPLAIN COMPLEMENT FIXATION TEST (CFT) INTERPRETATION.

POSITIVE CFT:

- No lysis of RBCs
- Complement proteins are fixed by antigen-antibody complexes.
- Indicates the presence of antigen in patient's serum.

NEGATIVE CFT:

- Lysis of RBCs occurs
- No complement fixation by antigen-antibody complexes.
- Indicates absence of antigen.

9. DESCRIBE THE FUNCTIONS OF IgG, IgM, IgA, IgD, and IgE.

Immunoglobulin	Major Functions
IgG	Most abundant serum antibody; crosses placenta; activates complement; opsonization; neutralization.
IgM	First antibody produced during primary response; strong complement activator; mainly intravascular.
IgA	Major antibody in secretions (saliva, tears, colostrum); provides mucosal immunity.
IgD	Functions mainly as B-cell receptor on mature B-cells.
IgE	Mediates allergic reactions and immunity against parasites by binding to mast cells and basophils.

10. EXPLAIN CLONAL SELECTION THEORY.

Answer:

Clonal selection theory states that each lymphocyte bears receptors with a single specificity. When

an antigen enters the body, it selects the lymphocyte clone with complementary receptors. The selected clone proliferates and differentiates into effector and memory cells.

IMPORTANT PRINCIPLES:

1. Each lymphocyte bears receptors of single specificity.
2. Interaction between antigen and receptor leads to activation.
3. Activated lymphocytes undergo proliferation (clonal expansion).
4. Clones differentiate into effector and memory cells.
5. Self-reactive lymphocytes are eliminated during development.

**NOTE: This collection is designed to help you revise important concepts quickly.
For the best results, study your handouts and course material alongside this
compilation.**

Prepare Smart, Work Hard, and Aim for Excellence.

Best of Luck! 🍀 📖