Kamla Nehru Mahavidyalaya

Department of Biotechnology

Subject: Biotechnology

Teacher Name: Nishant V. Burade

Topic : Immunology 1,2,3,4

Answers marked by : ✔️

1.The branch of biology, which involves the study of immune systems in all organisms is called\_\_\_\_\_\_\_\_\_.

(a) Zoology

(b) Microbiology

(c) Immunology

(d) Biotechnology

Answer: c

2.Which of the following immunity is obtained during a lifetime?

(a) Acquired immunity

(b) Active immunity

(c) Passive immunity

(d) None of the above

Answer: a

3.How many types of antibodies are there?

(a) Five.

(b) Three.

(c) Two.

(d) Four.

Answer: a

4.Which of the following cells is involved in cell-mediated immunity?

(a) Leukaemia

(b) T cells

(c) Mast cells

(d) Thrombocytes

Answer: b

5.Which of the following protects our body against disease-causing pathogens?

(a) Respiratory system

(b) Immune system

(c) Digestive system

(d) Respiratory system

Answer: b

6.Hepatitis is an example of \_\_\_\_\_\_\_.

(a) Subunit Vaccine

(b) Killer Vaccine

(c) Toxoids Vaccine

(d) Recombinant Vaccine

Answer: d

7.Which of the following statements is true about the IgM of humans?

(a) IgM can cross the placenta

(b) IgM can protect the mucosal surface

(c) IgM is produced by high-affinity plasma cells

(d) IgM is primarily restricted in the circulation

Answer: d

8.Interferons are

(a) Cytokine barriers

(b) Physical barriers

(c) Cellular barriers

(d) Physiological barriers

Answer: a

9.Which of the following cells of the immune system do not perform phagocytosis?

(a) Macrophage

(b) Neutrophil

(c) Eosinophil

(d) Basophil

Answer: d

10.Monocytes differentiate into which kind of phagocytic cells?

(a) Neutrophil

(b) B cell

(c) Macrophage

(d) T cell

Answer: c

11.During an allergic immune response, histamine is released from

A. B lymphocytes

B. T lymphocytes

C. mast cells

D.special Lymphocytes that also secrete IgE

Answer: d

12. How many antigen-binding sites does a pentameric IgM molecule contain?

A.Two

B.Five

C.Ten

D.Fifteen

Answer: c

13.Which of the following does NOT form the basis of an antigen-antibody binding?

A.Hydrogen bond

B.Ionic interactions

C.Covalent bond

D.Hydrophobic interactions

Answer: c

14.Only immunoglobulins to cross the placenta is

A.IgG

B.IgM

C.IgA

D.IgE

Answer: a

15.Mast cells contain vesicles that store large amounts of histamine. After staining with eosin, these vesicles arestained red in colour. Identify which of the following interactions is involved between histamine and eosin?

A.Hydrophobic interaction

B.Electrostatic interaction

C.Covalent bonding

D.Hydrogen bonding

Answer: b

16.Which of the following statements is FALSE for the nitric oxide gas?

A.An intracellular signaling molecule

B.Deamination of histidine results into nitric oxide production

C.Stimulates guanylyl cyclase to produce cGMP

D.Can be produced by activated neutrophils

Answer: b

17.Kupffer cells are found in

A.stomach

B.liver

C.small intestine

D.large intestine

Answer: b

18.The phenomenon of expression of only one allele of an immunoglobulin gene in lymphocytes is known as

A.allelic exclusion

B.allelic inclusion

C.allelic variation

D.allelic heterogeneity

Answer: a

19.The role of salicylic acid in systemic acquired resistance of plants is to

A.directly destroy the pathogens

B.activate defenses throughout the plant before the infection spreads

C.activate heat shock proteins

D.sacrifice the infected tissue

Answer:b

20.Type II hypersensitivity

A.is antibody independent

B.is complement independent

C.is mediated by CD8+T cells

D.involves antibody mediated destruction of cells

Answer: d

21.A mouse, which lacks thymus, is called

A.SCID mouse

B.NUDE mouse

C.BEIGE mouse

D.CBA/N mouse

Answer: b

22.The removal of bursa of Fabricius from a chicken results in

A.a delayed rejection of skin graft

B.low serum levels of antibodies

C.anemia

D.a marked decrease in the number of circulating T lymphocytes.

Answer: b

23.Which of the following will not behave as APC?

A.Macrophage

B.Dendritic cells

C.B-lymphocytes

D.NK cells

Answer: d

24.Which of the following is not true for MHCI.

A.Expressed by all nucleated cells

B.Express antigen processed by proteosome

C.MHC I–Ag complex is recognized by Tc cells

D.Present 13-18 AA long antigenic peptide

Answer: d

25.Graft transplanted between two genetically different individuals of same species, is referred to as

A.Autograft

B.Syngraft

C.Allograft

D.Xenograft

Answer: c

26.Which of the following is incorrect about CD4.

A.Expressed by TH cells

B.Recognize MHC II – Ag complex

C.Behave as receptor for HIV

D.Heterodimer of a and b polypeptide chains

Answer : d

27.Hinge region of immunoglobulin is critical for functional aspects. Consider the following statements which are not related to hinge region?

A.Proline amino acid present in higher amount than other amino acid

B.Present only on heavy chain of immunoglobulin

C.Present in all classes of immunoglobulin

D.Responsible for antigen recognition

Answer: d

28Identify the autoimmune diseases among the following

A.Type II Diabetes Mellitus

B.Type I Diabetes Mellitus

C.Gestational Diabetes

D.Pernicious Anaemia

Answer: b

29.Which of the following is not true for B-lymphocyte

A.Produces only secretory immunoglobulins

B.Major B-cell receptor is IgM

C.Can recognize antigen and form memory cells too

D.Can’t behave as antigen presenting cells

Answer: d

30.Which of the given conditions is related to absence of thymus gland

A.Nude mice

B.Down’s syndrome

C.DiGeorge’s syndrome

D.Burkitt’s lymphoma

Answer: a

31.Which of the following is not matched during cell apoptosis event

A.Mitochondria are involved

B.Energy dependent, reversible process

C.Cell inreases its size and inflammed

D.Caspases are intrinsic to apoptosis pathway

Answer: c

32.Naturally acquired active immunity would be most likely acquired through which of the following processes?

a. vaccination

b. drinking colostrum

c. natural birth

d. infection with disease-causing organism followed by recovery.

Answer: d

33.Which of the following conveys the longest-lasting immunity to an infectious agent?

a. Naturally acquired passive immunity

b. Artificially acquired passive immunity

c. Naturally acquired active immunity

d. All of these

e. None of these

Answer: c

34.Which of the following substances will not stimulate an immune response unless they are bound to a larger molecule?

a. Antigen

b. Virus

c. Hapten

d. Miligen

e. Antibody

Answer: c

35.B and T cells are produced by stem cells that are formed in:

a. Bone marrow

b. The liver

c. The circulatory system

d. The spleen

e. The lymph nodes

Answer: a

36.B cells mature in the……….. while T cells mature in the

a. Thymus/bone marrow and gut-associated lymphoid tissue (GALT)

b. Spleen/bone marrow and GALT

c. Bone marrow and GALT/Thymus

d. Liver/Kidneys

Answer: c

37.Which of the following immune cells/molecules are most effective at destroying intracellular pathogens?

a. T helper cells

b. B cells

c. Antibodies

d. Complement

e. T cytolytic cells

Answer: e

38.A living microbe with reduced virulence that is used for vaccination is considered:

a. A toxoid

b. Dormant

c. Virulent

d. Attenuated

e. Denatured

Answer: d

39.B cells that produce and release large amounts of antibodies are called:

a. Memory cells

b. Basophils

c. Plasma cells

d. Killer cells

e. Neutrophils

Answer: c

40.The specificity of an antibody is due to

a. its valence

b. The heavy chains

c. The Fc portion of the molecule

d. The variable portion of the heavy and light chain

Answer: d

41.In agglutination reactions, the antigen is a………

in precipitation reactions, the antigen is a……………

a. whole-cell/soluble molecule

b. Soluble molecule/whole-cell

c. Bacterium/virus

d. Protein/carbohydrates

e. Protein/Antibody

Answer: a

42.B Cells are activated by

a. Complement

b. Antibody

c. Interferon

d. Memory cells

e. Antigen

Answer: e

43.Fusion between a plasma cell and a tumor cell creates a

a. Myeloma

b. Natural killer cell

c. Lymphoblast

d. Lymphoma

e. Hybridoma

Answer: e

44.Monoclonal antibodies recognize a single:

a. Antigen

b. Bacterium

c. Epitope

d. B cell

e. Virus

Answer: c

45.Cell-mediated immunity is carried out by………….. while humoral immunity is mainly carried out by………………..

a. B cells/T cells

b. Epitopes/Antigens

c. T cells/B cells

d. Antibodies/Antigens

e. Antibodies/Phagocytes

Answer: c

46.The ability of the immune system to recognize self-antigens versus nonself antigen is an example of:

a. Specific immunity

b. Tolerance

c. Cell-mediated immunity

d. Antigenic immunity

e. Humoral immunity

Answer: b

47. Humoral immunity is mediated by

a) B cells

b) macrophages

c) both a and b

d) phagocytes

Answer: a

48. Humoral immunity is also called as

a) antibody mediated immunity

b) non-specific immune response

c) antigen mediated immunity

d) all of these

Answer: a

49. B cell has receptor on its surface which is

a) monomeric IgM

b) dimeric IgM

c) monomeric IgG

d) B cell receptor

Answer: a

50. B cells upon activation by antigens

a) undergo clonal expansion followed by clonal selection

b) divides continuously

c) undergo clonal selection followed by clonal expansion

d) secrete antibodies

Answer: c

51. B cells differentiates to form

a) plasma cells

b) effector cells

c) plasma cells and memory B cells

d) none of these

Answer: c

52. Which of the following statement is incorrect regarding plasma cells

a) plasma cells are the effector cells

b) plasma cells secretes antibodies

c) The precursor of plasma cell is B cell

d) plasma cell has surface receptors

Answer: d

53. Origin and maturation of B cells takes place at

a) spleen

b) thymus

c) bone marrow

d) lymph nodes

Answer: c

54. The function of memory B cell is

a) antibody production

b) immunologic memory

c) regulated antibody production

d)none of these

Answer: b

55. B cells are

a) lymphocytes which are short lived

b) lymphocytes which are long lived

c) lymphocytes involved in non-specific defence

d) none of these

Answer: a

56. Generally antibodies produced against a pathogen is

a) monoclonal

b) homogenous

c) polyclonal

d)all of same specificity

Answer:c

57. Antibodies produced by plasma cells are

a) specific

b) produced against the epitope that triggered B cell activation

c) both a and b

d) diverse

Answer: c

58. Antibodies clear out antigens by

a) neutralization

b) precipitation

c) agglutination

d) all of these

Answer: d

59. Antibodies are

a) opsonins

b) lipoproteins

c) serum phagocytes

d) none of these

Answer: a

60. Any substance that promotes phagocytosis of antigens by binding to them are called as

a) opsonins

b) phagocytes

c) macrophages

d) interleukins

Answer: a

61. The phenomenon of selective proliferation of B cells in response to their interaction with the antigen is called

a) clonal expansion

b) monoclonal selection

c) clonal proliferation

d) clonal selection

Answer: d

62. The specific targeted responses constitute the third line of defence in response to an infectious agent and is called as

a) third line of defence

b) adaptive immunity

c) acquired immunity

d) all of these

Answer: d

63. The characteristics of adaptive immunity include

a) specificity

b) immunologic memory

c) discrimination of self from non self molecules

d) all of these

Answer: d

64. Which of the cells are involved in adaptive immunity

a) B cells and T cells

b) B cells only

c) T cells only

d) macrophages and NK cells

Answer: a

65. T cell mediates

a) humoral immunity

b) non-specific defence

c) cell mediated immunity

d) none of these

Answer: c

66. The ratio of T cells to B cells is

a) 3:1

b) 1:3

c) 1:1

d) 1:2

Answer: a

67. The antibody mediated humoral immunity is mediated by

a) B cells and T cells

b) B cells

c) T cells

d) macrophages and NK cells

Answer: b

68. T cells and B cells are originated in

a) spleen

b) thymus

c) bone marrow

d) lymph nodes

Answer: c

69. Injection of anti-venom against snake bite is an example of

a) active immunity

b) passive immunity

c) non-specific immunity

d) phagocytic immunity

Answer: c

70. Which of the following statements are true regarding adaptive immunity

a) prior exposure to antigen is essential

b) prior exposure to antigen is not essential

c) it is a non-specific defence mechanism

d) macrophages are the major cells involved

Answer: a

71. Active immunity involves

a) contact with foreign antigens

b) immunologic memory

c) slow primary response

d)all of the above

Answer: d

72. Active immunity is produced by

a) clonal selection

b) clonal expansion

c) both a and b

d) all of these

Answer: c

73. Cells involved in adaptive immunity or acquired immunity or specific defence include

a) T cells

b) B cells

c) antigen presenting cells

d) all of these

Answer: d

74. Plasma cells are secreted by

a) T cells

b) B cells

c) antigen presenting cells

d) macrophages

Answer: b

75. The characteristics of passive immunity include

a) immediate relief

b) no immunologic memory

c) resistance for a short period only

d) all of these

Answer: d

76. Immunologic memory is provided by

a) B cells

b) T cells

c) both a and b

d) phagocytes

Answer: c

77. Injection of anti-venom to a patient for snake bite is an example of

a) Naturally acquired active immunity

b) Artificially acquired active immunity

c) Naturally acquired passive immunity

d) Artificially acquired passive immunity

Answer: d

78. Newborns get their antibodies from mothers milk. This is an example of

a) Naturally acquired active immunity

b) Artificially acquired active immunity

c) Naturally acquired passive immunity

d) Artificially acquired passive immunity

Answer: c

79. Vaccination is an example of

a) Naturally acquired active immunity

b) Artificially acquired active immunity

c) Naturally acquired passive immunity

d) Artificially acquired passive immunity

Answer: b

80. Often patients are immune to diseases like chicken pox once infected. This immunity is an example of

a) Naturally acquired active immunity

b) Artificially acquired active immunity

c) Naturally acquired passive immunity

d) Artificially acquired passive immunity

Answer: a

81. Skin is the largest organ in the body and protects us by preventing pathogen entry. This is an example of

a) Naturally acquired innate immunity

b) Artificially acquired adaptive immunity

c) Naturally acquired passive immunity

d) Artificially acquired passive immunity

Answer: a

82. All the following comes under non-specific defence mechanism except

a) fever

b) phagocytes

c) cell mediated immunity

d) complement system

Answer: c

83. Which of the following is the site of T cell maturation?

a) Bone marrow

b) Thymus

c) Spleen

d) Appendix

Answer: b

84. Which of the following immune mechanism is responsible for protecting us from diseases of other species?

a) Active immunity

b) Passive immunity

c) Innate immunity

d) Adaptive immunity

Answer: c

85. Primary lymphoid organs include

a) Thymus and spleen

b) Thymus and bone marrow

c) Thymus, bone marrow and spleen

d) Thymus, bone marrow, spleen and lymph nodes

Answer: b

86. Activation of B cell receptor by the binding of an epitope result in the formation of

a) plasma cells and T cytotoxic cells

b) memory cells and T cytotoxic cells

c) Plasma cells for antibody production and memory cells for primary response

d) Plasma cells for antibody production and memory cells for secondary response

Answer: d

87. Which of the following is the most abundant immunoglobulin (Ig)

a) IgM

b) IgG

c) IgA

d) IgE

Answer: b

88. Which of the following IgG is targeted against polysaccharides of encapsulated bacteria

a) IgG1

b) IgG2

c) IgG3

d) IgG4

Answer: b

89. IgG consists of

a) 2 light chains and two heavy chains joined by di-sulphide bond (H2L2)

b) 2 light chains and two heavy chains joined by hydrogen bond (H2L2)

c) 2 light chains and a heavy chain joined by di-sulphide bond (H1L2)

d) a light chain and two heavy chains joined by di-sulphide bond (H2L1)

Answer: a

90. Which is the Ig that can cross placenta and provide passive immunity to new born

a) IgM

b) IgG

c) IgA

d) IgE

Answer: b

91. Which is the Ig that first reaches the site of infection

a) IgM

b) IgG

c) IgA

d) IgE

Answer: a

92. Which is the largest Ig

a) IgM

b) IgG

c) IgA

d) IgE

Answer: a

93. Which of the following statements are true regarding IgM

a) IgM is a pentamer and is the largest Ig and called as ‘natural antibody’

b) IgM exists as monomer on B-cell surface

c) IgM is involved in early primary immune response

d) all of these

Answer: d

94. Which of the following statements are true

a) IgM is involved in primary immune response

b) IgG is involved in primary immune response

c) Both IgM and IgG are involved in primary immune response

d) IgG is involved only in secondary immune response

Answer: c

95. The antibody present in secretions like tears, saliva, colostrum is

a) IgM

b) IgG

c) IgA

d) IgE

Answer: c

96. The primary Ig of exocrine secretions is

a) IgM

b) IgG

c) IgA

d) IgE

Answer: c

97. The second most abundant Ig is

a) IgM

b) IgG

c) IgA

d) IgE

Answer: c

98. The most effective Ig is

a) IgM

b) IgG

c) IgA

d) IgE

Answer: a

99. IgM is a

a) pentamer with 10 antigen binding sites

b) tetramer with 8 antigen binding sites

c) monomer with 2 antigen binding sites

d) dimer with 4 antigen binding sites

Answer: a

100.The Ig that mediates allergic reaction is

a) IgM

b) IgG

c) IgA

d) IgE

Answer: d

101. The Ig involved in host defence against parasitic infection (helminths)

a) IgM

b) IgG

c) IgA

d) IgE

Answer: d

102. The bonds involved in antigen-antibody interactions are

a) weak hydrogen bonds and vanderwalls forces

b) strong covalent bonds

c) strong di- sulphide bonds

d) all of these

Answer: a

103. Which of the following statement is true

a) all immunogens are antigens but all antigens are not immunogens

b) all immunogens are antigens and all antigens are immunogens

c) all immunogens are not antigens but all antigens are immunogens

d) all immunogens are proteins and all proteins are immunogens

Answer: a

104. Any agents that may stimulate the immune system and enhance the response without having any specific antigenic effect by itself.

a) antigens

b) allergens

c) adjuvants

d) carriers

Answer: c

105. Small chemical groups on the antigen molecule that can react with antibody

a) epitope

b) paratope

c) isotope

d) allotope

Answer: a

106. Which of the statements are true regarding antigen

a) generally self-molecules and molecules with low molecular weight are non-immunogenic

b) an antigen generally has many epitopes

c) heteropolymers are more immunogenic than homopolymers

d) all of these

Answer: d

107. Antibodies are

a) proteins

b) glycoproteins

c) carbohydrates

d) nucleic acid

Answer: b

108. Antibodies consists of

a) 2 light chains and 2 heavy chains arranged in a Y-shaped configuration

b) A light chain and 2 heavy chains arranged in a Y-shaped configuration

c) 2 light chains and a heavy chain arranged in a Y-shaped configuration

d) all of these

Answer: a

109. Light chains and heavy chains are joined by

a) covalent bond

b) hydrogen bond

c) di-sulphide bond

d) ionic bond

Answer: c

110. The antigen binding site on an antibody is called

a) antitope

b) epitope

c) paratope

d) endotope

Answer: c

111. An antibody has

a) 2 Fab regions and an Fc region

b) an Fab region and an Fc region

c) 2 Fab regions and 2 Fc regions

d) many Fab regions and many Fc regions

Answer: a

112. The hypervariable region resides in the

a) N terminal region of light chain

b) N-terminal region of light and heavy chain

c) C-terminal region of light chain

d) C-terminal region of light chain and heavy chain

Answer: b

113. Fab stands for

a) fragment antibody binding

b) fragment antigen binding

c) fragment antibody or antigen binding

d) fragment affinity binding

Answer: b

114. Which of the following statement is true regarding Fc region

a) fragment crystalisation and is the constant region

b) fragment constant and is the variable region

c) fragment crystalisation and is the variable region

d) fragment crystalisation and has both variable and constant region

Answer: a

115. Fab region

a) has a hypervariable region that binds with antibody

b) has a hypervariable region that binds with antigen

c) has a hypervariable region that binds with other immune cells

d) all of these

Answer: b

116.Fc region is involved in

a) cell surface receptor binding

b) complement activation

c) determining diffusivity of antibody molecule

d) all of these

Answer: d

117. The ability of antigen to stimulate antibody production is called

a) affinity

b) Antigenicity

c) elicitation

d) none of these

Answer: b

118. Light chains and heavy chains of antibodies are joined by

a) hydrogen bond

b) hydrophobic bond

c) di-sulphide bond

d) ionic bond

Answer: c

119. Clearance of antigens by antibodies involve

a) neutralization and agglutination

b) opsonisation and complement activation

c) precipitation

d) all of these

Answer: d

120. The two identical light chains of an antibody belongs to

a) kappa only

b) lambda only

c) lambda or kappa

d) none of these

Answer: a

121. The hypervariable region of antibody consists of

a) 5-10 aminoacids that form antigen binding site

b) 50-100 aminoacids that form antigen binding site

c) 5-10 aminoacids that forms the antibody binding site

d) a part of constant region of heavy and light chain

Answer: a

122. Immune disorders include

a) hypersensitivity

b) auto-immune diseases

c) immunodeficiency

d) all of these

Answer: d

123. The inappropriate response of immune system towards a relatively harmless antigen causing harm to the host is referred as

a) hypersensitivity

b) auto-immune diseases

c) immunodeficiency

d) tolerance

Answer: a

124. Which of the following Ig is involved in mediating allergic reactions

a) IgG

b) IgM

c) IgE

d) IgA

Answer: c

125. The major chemical messenger involved in hypersensitivity is

a) interleukines

b) lymphokines

c) hiatamines

d) interferons

Answer: c

126. Which of the following types of hypersensitive reactions is antibody mediated

a) Type I

b) Type II

c) Type III

d) all of these

Answer: d

127. Which one of the following is a cell mediated hypersensitive reaction

a) Type I

b) Type II

c) Type III

d) Type IV

Answer: d

128.The inability to distinguish between self-cells and non-self-cells may lead to

a) hypersensitivity

b) auto-immune diseases

c) immunodeficiency

d) tolerance

Answer: b

129. Majority of auto immune diseases are

a) cell mediated

b) antibody mediated

c) macrophage mediated

d)mast cells mediated

Answer: b

130. All of the following are autoimmune disorders except

a) Graves disease

b) SCID

c) Rheumatoid arthritis

d) Addison’s disease

Answer: b

131. Rheumatoid arthritis mostly occur in individuals carrying

a) HLA-DR4 gene (HLA-human leucocyte antigen)

b) HLA-DR1 gene

c) HLA-DR3 gene

d)all of the above

Answer: a

132. Some defects or mutations in components of innate or adaptive immunity may lead to

a) hypersensitivity

b) auto-immune diseases

c) immunodeficiency

d) tolerance

Answer: c

133. In severe combined immune deficiency (SCID), the patients are deficient in

a) B cells

b) T cells

c) both a and b

d) IgA

Answer: c

134. SCID can occur due to the absence of an enzyme

a) adenosine deaminase

b) guanosine deaminase

c) phosphorylase

d) thymidine deaminase

Answer: a

135.HIV attacks

a) T helper cells

b) T cytotoxic cells

c) B cells

d) macrophages

Answer: a

136. All of the following are immunodeficiency diseases except

a) Graves disease

b) SCID

c) DiGeorge’s syndrome

d) Hyper IgM syndrome

Answer: a

137.Complement system

a) consists of 20 serum proteins

b) serum proteins acts as biological cascade

c) both a and b

d) are set of antibodies

Answer: c

138. Complement system is involved in

a) specific defence

b) non-specific defence

c) both a and b

d) none of these

Answer: c

139. Which of the following statements are true regarding complement activation

a) lysis of pathogen, tumor cells and allografts

b) production of mediators that attracts neutrophils to the site of inflammation

c) opsonization

d) all of these

Answer: d

140. Classical pathway of complement system is activated by

a) antibody-antigen complexes

b) antigen

c) antigenic peptides

d) antigens bound to MHC

Answer: a

141. Alternate pathway of complement system is activated by

a) antibody-antigen complexes

b) antigen

c) microorganisms or its toxins

d) antigens bound to MHC

Answer: c

142. Classical pathway of complement system is involved in

a) specific defence

b) adaptive immunity

c) both a and b

d) non-specific defence

Answer: c

143. Alternate pathway of complement system is involved in

a) non-specific defence

b) innate immunity

c) both a and b

d) adaptive immunity

Answer: c

144. Which of the following is the central molecule in complement pathway

a) C1

b) C2

c) C3b

d) C5

Answer: c

145. Cell lysis in complement pathway is initiated by

a) membrane destruction complex

b) membrane degradation complex

c) membrane attacking complex

d) membrane lysis complex

Answer: c

146. MAC is

a) C5b6789 complex

b) C5b5678 complex

c) C5b5789 complex

d) Protein polysaccharide complex

Answer: a

147.Which of the following is required for C1 activation

a) Ca

b) Mg

c) Mn

d) Zn

Answer: a

148. Which of the following is the most potent anaphylatoxin

a) C3a

b) C4a

c) C5a

d) C1

Answer: c

149. In alternate pathway

a) factor b is involved

b) factor d is involved

c) both a and b

d) Only factor f is involved

Answer: c

150. Biological role of complement system include

a) cytolysis and chemotaxis

b) opsonisation

c) anaphylotoxin and enhanced antibody production

d) all of these

Answer: d

151. Body’s own cells are protected from membrane attack complex by a surface glycoprotein called

a) MHC

b) DAF

c) TCR

d) BCR

Answer: b

152. Allergy to penicillin is an example of

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: a

153. Type IV hypersensitivity is also called as

a) immediate hypersensitivity

b) delayed hypersensitivity

c) cytotoxic hypersensitivity

d) immune complex hypersensitivity

Answer: b

154. The most common class of antibody involved in type II hypersensitivity is

a) IgG

b) IgM

c) IgE

d) IgD

Answer: a

155.T helper cell mediated hypersensitivity is

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: d

156. Type III hypersensitivity is triggered by

a) mast cells and IgE

b) K cells and IgG

c) deposition of antigen antibody complexes

d) Th cells

Answer: c

157. Autoimmune hemolytic anemia (AHA) is an example of

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: b

158. “Wheal and flare” reaction is characteristic reaction associated with identification of

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: a

159. K cells and IgG mediated hypersensitivity is

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: b

160.Antibody dependant cytotoxicity is associated with

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: b

161. Allergies to sea foods, eggs etc is an example of

a) Type I hypersensitivity

b) Type II hypersensitivity

c) Type III hypersensitivity

d) Type IV hypersensitivity

Answer: a

162. Monoclonal antibodies are

a) heterogenous antibodies produced from single clone of plasma cells

b) homogenous antibodies produced from single clone of plasma cells

c) both a and b

d) none of these

Answer: b

163.Natural humoral immune response against a pathogen leads to the production of

a) polyclonal antibodies

b) monoclonal antibodies

c) macrophages

d) none of these

Answer: a

164.The technology used for the production of monoclonal antibodies is

a) massculture technology

b) hybridoma technology

c) suspension culture

d) none of these

Answer: b

165. Hybridoma technology was developed by

a) Kohler and Milstein

b) Khorana and Nirenberg

c) Khorana and Korenberg

d) Beedle and Tautum

Answer: a

166.The hybridomas are made by

a) fusing T cells with myeloma cells

b) fusing B cells with myeloma cells

c) fusing T helper cells with myeloma cells

d) fusing B memory cells with myeloma cells

Answer: b

167. All are Mabs except

a) Rituximab

b) Transtuzumab

c) Infliximab

d) tamoxifen

Answer: d

168.Mabs are

a) specific towards a paratope

b) specific towards an epitope

c) specific towards an antigen

d) none of these

Answer: b

169. Which of the following statement is incorrect regarding HAT medium

a) HAT medium is a selective medium

b) Aminiopterin in the HAT medium blocks de novo pathway of nucleotide synthesis

c) Salvage pathway requires aminopterin and thymidine

d) Hypoxanthin is converted to guanine by HGPRT enzyme

Answer: c

170.HGPRT- mutant cells are raised by inducing mutations using

a) 5-bromouracil

b) 8-azaguanine

c) colchicine

d) 6-methy isocyanate

Answer: b

171. In hybridoma technology, hybrid cells are selected in

a) MS medium

b) HAT medium

c) x-gal medium

d) Whites medium

Answer: b

172. Which of the following cell is made deficient of hypoxanthine guanyl phosphoribosyl transferase (HGPRT) enzyme

a) B cells

b) hybrid cells

c) myeloma cells

d) none of these

Answer: c

173.Which of the following statement is incorrect regarding HAT selection

a) B cells are HGPRT + and can grow in HAT medium but undergoes normal cell death

b) Myeloma cells cannot grow in HAT medium as these cells lack HGPRT

c) Hybrid cell survive in HAT medium as it inherits HGPRT form B cells

d) Aminopterin in HAT medium blocks de novo pathway of nucleotide synthesis only in myeloma cells

Answer: d

174. Mabs are used in

a) the screening of recombinants

b) diagnostic kits

c) the treatment of many cancers

d) all of these

Answer: d

175. The major hazards of Mabs are

a) difficult in purification

b) contamination with retroviral particles from mouse myeloma cells

c) non specificity

d) all of these

Answer: b

176. Mabs are produced by

a) in vivo method

b) suspended cell culture in fermenters

c) Immobilized cell reactors

d) all of these

Answer: d

177.Which of the following barriers does not come under innate immunity?

a) Physical barrier

b) Physiological barrier

c) Complex barrier

d) Cellular barrier

Answer: c

178. 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

Answer: a

179. Innate immunity is also called as \_\_\_\_\_\_\_\_

a) Specific immunity

b) Inborn immunity

c) Acquired immunity

d) Adapted immunity

Answer: b

180. How many lines of defence are present in our body?

a) One

b) Two

c) Three

d) Four

Answer: c

181. Acquired Immunity is not called as \_\_\_\_\_\_\_\_\_\_\_

a) Specific Immunity

b) Adapted Immunity

c) Humoral Immunity

d) Non-specific Immunity

Answer: d

182.A biological structure and process in an organism that protects the organism against disease by identifying and killing pathogen or tumor cells is called as ………………………………………………………………………..

a) Circulatory system

b) Haemolysis

c) Immune system

d) Biofertilizer system

Answer: c

183.Which of the following part of the body is included in the immune system?

a) White blood cells

b) Phagocytes

c) Lymphocytes

d) All of them

Answer: d

184.The bone marrow and thymus are the …………………….………………………………………………… organs.

a) Primary lymphoid organs

b) Secondary lymphoid organs

c) Tertiary lymphoid organs

d) Quaternary lymphoid organs

Answer: a

185.The mucosal associated lymph tissue, Gut associated lymph tissue, spleen and lymph nodes are organs of ……………………………………………………………………………….

a) Quaternary lymphoid organs

b) Tertiary lymphoid organs

c) Primary lymphoid organs

d) Secondary lymphoid organs

Answer: d

186. ………………………………………………………………… is branch of biology that deals with the study of protection against foreign macromolecules or invading organism and bodies responses to them.

a) Immunology

b) Parasitology

c) Zoology

d) All of them

Answer: a

187.The molecules and cells of the immune system that gives collective and coordinated response to the foreign substances or pathogens is known as ……………………………………………………………………….

a) Immunology

b) Immune system

c) Immunity

d) Immune response

Answer: d

188.………………………..……..…………………………….. Is a first line of immune response and is also called as non-adaptive immunity.

a) Innate immunity

b) Acquired immunity

c) T lymph immunity

d) B lymph immunity

Answer: a

189.The acquired immunity is also known for ………………………………………………………………………….

a) Non- adaptive immunity

b) Birth immunity

c) First immunity

d) Adaptive immunity

Answer: d

190.The anatomic barriers in innate type of immune system are ………………………………………………………….…………….

a) Skin

b) Mucous membranes

c) Both of above

d) None of above

Answer: c

191. The bilobed organ that is present on the top of the heart is ………………………………………………………………………….

a) Collar bone

b) Thymus

c) Trachea

d) Pharynx

Answer: b

192.Nonspecific host defences that exist prior to exposure to an antigen is called

a) acquired immunity

b) innate immunity

c) adaptive immunity

d) all of these

Answer: b

193.Innate immunity is also called

a) familial

b) genetic

c) inborn

d) all of these

Answer: d

194.Innate immunity involves all except

a) anatomic barriers

b) phagocytic

c) inflammatory mechanisms

d) antibody production

Answer: d

195. First line of defence include

a) skin

b) mucus

c) lysozyme secretion

d) all of these

Answer: d

196. Skin prevents pathogen entry

a) dead cells of the skin outer layer prevents pathogen entry

b) skin secretes oil by sebaceous gland that makes surface acidic

c) skin secretes sweat by sudoriferous gland that makes surface acidic

d) all of these

Answer: d

197. Stomach clear out pathogens by

a) secreting HCl

b) secreting digestive enzymes

c) both a and b

d) none of these

Answer: c

198.Vaginal bacterial symbionts like Lactobacilli prevents pathogen by

a) producing lactic acid thereby reducing pH

b) secreting antibiotics

c) secreting toxins

d) none of these

Answer: a

199. Bodies internal defence or second line of defence include

a) phagocytes

b) fever

c) interferons

d) all of these

Answer: d

200.The functions of macrophages include

a) phagocytosis

b) antigen presenting cells

c) cytokine production

d) all of these

Answer: d

201.Kupffer cells are macrophages found on

a) lung

b) bone

c) nephrons

d) liver

Answer: d

202. Neutrophils are

a) phagocytes

b) short lived leucocytes

c) involved in second line of defence

d) all of these

Answer: d

203.Tissue damage caused by wound or invading pathogenic organisms induces a complex sequence of events collectively known as

a) opsonisation

b) phagocytosis

c) inflammation

d) none of these

Answer: c

204.Temperature rising chemicals are called

a) pyrogens

b) thermogens

c) both a and b

d) none of these

Answer: a

205.The internal second line of defence involves all except

a) natural killer cells

b) complement system

c) interferons

d) antibodies

Answer: d

206. Antiviral glycoproteins released by living cells in response to viral attack and induce a viral resistant state to neighbouring cells is called as

a) natural killer cells

b) complement system

c) interferons

d) phagocytes

Answer: c

207. ………………………………………….……………………………….. And lymphatic system both supply fluid flow in the body and these are different type of fluid.

a) Nervous

b) Cardiovascular

c) Respiratory

d) Excretory

Answer: b

208.…………………………………………………………………….. Is the fluid which left behind in the tissues when the blood travels through capillary beds and it moves to venous system.

a) Lymph

b) Internode

c) Haemoglobin

d) Nephron

Answer: a

209.Which of the following are the components of lymph?

a) Oxygen

b) Proteins

c) Glucose

d) All of them

Answer: d

210.In the lymphatic system, lymphatic vessels are connected with the ………………………………………..……………………………………. To do its function.

a) Bone marrow

b) Teeth

c) Bones

d) Blood vessels

Answer: d

211.Which of the following duct collects lymph from the left side of body and regions of right side of the body below thorax?

a) The left thoracic duct

b) The right thoracic duct

c) The middle thoracic duct

d) The endothoracic duct

Answer: a

212.Lymph node are distributed throughout the body and it is not present in …………………………………………………………………………..

a) Groin

b) Neck

c) Central nervous system

d) Armpit

Answer: c

213.……………………………………………………………………………. Is composed of lymphoid tissue and it is small bean shaped structure.

a) Kidney

b) Lymph node

c) Medulla oblongata

d) Spinal cord

Answer: b

214.The lymphatic tissue are present under the mucous membrane which lines nose, mouth and pharynx and it is called as …………………………………………………………………………….

a) Larynx

b) Pharynx1

c) Epiglottis

d) Tonsils

Answer: d

215. In the lymphatic system, lymph contains more ……………………………………………………………………………..Than plasma.

a) WBCs

b) RNA

c) DNA

d) Henle

Answer: a

216. In the medulla of lymph node, lymphocytes are arranged in strands known as ………………………………………………………………………….

a) Follicles

b) Chyli

c) Medullary cords

d) Trabeculae

Answer: c

217.MALT constitutes about \_\_\_\_\_\_\_\_\_\_\_ percent of the lymphoid tissue in human body

1) 50%

2) 20%

3) 70%

4) 10%

Answer: a

218.VDRL test is an example of

[A] Tube test

[B] Ring test

[C] Slide test

[D] none of these

Answer: c

219.Weil-Felix reaction is based on sharing of antigens between

[A] sheep RBCs and EB virus

[B] mycoplasma and human O group RBCs

[C] rickettsial antigens and antigens of certain strains of Proteus

[D] none of these

Answer: c

220.Agglutination reaction is more sensitive than precipitation for the detection of

[A] Antigens

[B] Antibodies

[C] Complement

[D] Antigen-Antibody Complexes

Answer: a

221. In which of the following case a large lattice is formed?

[A] Antibody is in excess

[B] Antigens and antibodies are in optimal proportion

[C] Antigen is in excess

[D] None of these

Answer: b

222. Ring test is used for

[A] C-reactive protein test

[B] Ascoli’s thermoprecipitation test

[C] typing of streptococci and pneumococci

[D] all of the above

Answer: d

223. Precipitation reaction can be converted into agglutination reaction by coating soluble antigen onto

[A] bentonite particles

[B] RBCs

[C] latex particles

[D] all of these

Answer: d

224.Monoclonal antibody production requires

[A] mouse splenic lymphocytes

[B] mouse myeloma cells

[C] both (a) and (b)

[D] none of these

Answer: c

225. Quellung reaction is used for typing of

[A] Klebsiella pneumoniae

[B] Streptococcus pneumoniae

[C] Both (a) and (b)

[D] None of these

Answer: c

226. Slide agglutination reaction is/are useful for the identification of the culture(s) of

[A] Shigella

[B] Vibrio cholerae

[C] Salmonella

[D] All of these

Answer: d

227.Amount of various immunoglobulin classes can be measured by

[A] double diffusion in one dimension

[B] single diffusion in two dimensions

[C] single diffusion in one dimension

[D] double diffusion in two dimensions

Answer: b

228. Which of the following immunoglobulins makes the largest percentage in breast milk?

(a) IgM

(b) IgD

(c) IgG

(d) IgA

Answer: d

229. Transplanted graft may be rejected due to

(a) cell-mediated immune response

(b) humoral immune response

(c) innate immune response

(d) passive response

Answer: a

230. Oral polio drops contain

(a) harvested antibodies

(b) activated pathogens

(c) attenuated pathogens

(d) gamma globulins

Answer: c

231. Antibodies are

(a) prostaglandins

(b) steroids

(c) lipoproteins

(d) glycoproteins

Answer: d

232. Interferons are

(a) antibiotic proteins

(b) antiviral proteins

(c) antigen proteins

(d) all of the above

Answer: b

233. Globulins of the blood plasma are responsible for

(a) defence mechanisms

(b) blood clotting

(c) oxygen transport

(d) osmotic balance

Answer: a

234. Which of the following antibodies is predominantly present in tears, saliva and mucous

(a) IgM

(b) IgG

(c) IgE

(d) IgA

Answer: d

235. The class of antibodies, which can cross placenta is

(a) IgD

(b) IgA

(c) IgG

(d) IGM

Answer: c

236. Antigen binding sites are present in

(a) Fab regions of an antibody

(b) Fc region of an antibody

(c) only in the light chain

(d) only in the heavy chain

Answer: a

237.Type I hypersensitivity involves

(a) IgD

(b) IgM

(c) IgE

(d) IgG

Answer: c

238.The lymphatic system consists of all the following except:

A) blood

B) lymph nodes

C) lymphatic vessels

D) lymph

Answer: a

239.Which of the following applies to the thoracic duct?

A) it drains the entire body above the diaphrag

B) it empties its contents into the subclavian vein

C) it carries blood into the lymphatic system

D) it arises in the vessels of the brain

Answer: b

240.Lymphatic capillaries resemble blood capillaries because lymphatic capillaries

A) have the same permeability as blood capillaries

B) lead to the vena cava

C) have a lining of endothelium

D) are thick-walled tubes

Answer: c

241.The fluid that passes through the lymphatic vessels

A) flows toward the lungs

B) passes from the lymphatic vessels into the arteries

C) enters the left ventricle of the heart through the right thoracic duct

D) moves in a single direction toward the heart

Answer: d

242.The T-lymphocytes and B-lymphocytes are the major cells of the

A) lymph nodes

B) lymphatic vessels

C) adrenal gland

D) thymus

Answer: a

243.All the following are important functions of the lymph nodes except

A) they serve as sites for production of antibodies

B) they remove foreign material phagocytized by macrophages

C) they are the sites where antigens stimulate the immune system

D) they function in the production of neutrophils, eosinophils, and basophils

Answer: d

244.Lymph nodes may be located in the human body in the tissues of the

A) stomach and brain

B) groin and neck

C) ventricle and atrium

D) thyroid gland and adrenal gland

Answer: b

245.The nodules of lymphoid tissue found in the wall of the intestinal tract are known as

A) Hashimoto's nodes

B) Grave's region

C) DiGeorge's nodes

D) Peyer's patches

Answer: d

246.Major Histocompatibility Complex is a tight cluster of linked\_\_\_\_\_\_\_\_\_\_\_

a) Carbohydrates

b) Proteins

c) Genes

d) Lipid molecules

Answer: c

247.What is the name of MHC in humans?

a) HLA

b) H2

c) Adjuvants

d) Haplotype

Answer: a

248.All the individual of the same species has the same allele of MHC genes.

a) True

b) False

Answer: b

249.Which of the following polypeptide is important for the expression of MHC I on the cell membrane?

a) Interferons

b) β2-microglobin

c) Lymphokines

d) Interleukins

Answer: b

250.Which of these are non-professional antigen presenting cells?

a) Macrophages

b) Dendritic cells

c) Fibroblast

d) B lymphocytes

Answer: c

251.Name the cell which receives antigen presented by MHC molecule.

a) Nk cells

b) B-cells

c) T-cells

d) Macrophages

Answer: c

252.Name the class of MHC which is recognized by CD4 TH cell.

a) MHC cannot recognize T cells

b) MHC III

c) MHC I

d) MHC II

Answer: d

253.Which MHC molecule recognizes CD8 TC cells?

a) MHC I

b) MHC II

c) MHC III

d) HLA-C

Answer: a

254.Name the part of processed antigen that binds to the MHC molecule and recognized by T-cells?

a) Immunoglobulin

b) Agretope

c) Epitope

d) Chaperone

Answer: b

255.In human normal B and T cells develop the CDC4+ and CDC8+ first and then they differentiate to CDC4+ CDC- and CDC4- CDC+. If there is a defect in development which quadrant in the flow cytometer graph will show more density?

A : 1

B : 2

C : 3

D : 4

Answer: b

256.In a flow cytometer you will see the cells lacking both the labels in \_\_\_\_\_\_\_\_\_\_\_\_ quadrant.

A : 1st

B : 2nd

C : 3rd

D : 4th

Answer: c

257.In flow cytometry which of the combination is impossible?

A : Both the labeled antigens in same particle

B : None of the labeled antigens on a particle

C : One of the labeled antigen

D : All can be true

Answer: d

258.How are the cells sorted?

A : By dilution plating until there are only single cell in each well of microtitre plate

B : By the differential weight

C : By electrostatic force

D : By magnetic force

Answer: c

259.Flow cytometry uses\_\_\_\_\_\_\_\_\_\_\_\_\_

A : Heavy isotope

B : Radioactive elements

C : Immunological techniques

D : Energy content

Answer: c

260.Which of the following drugs effect caspases?

A : Oblimerson

B : Pikan083

C : Tenovin

D : Apoptin

Answer: d

261.Which fluorescent dye can be used for red fluorescence?

A : Rhodamine

B : Fluorescein

C : Carmine

D : DAPI

Answer: a

262.In a flow cytometer the particles are analyzed all at a time.

A : True

B : False

Answer: b

263.Which of the following is incorrect about Self-Organizing Maps?

A : Clustering by SOMs is in principle similar to the k-means method

B : It doesn’t involve neural networks

C : The data points are initially assigned to the nodes at random

D : It starts by defining a number of nodes

Answer: b

264.which of the following is incorrect about Oligonucleotide Design in A microarray?

A : DNA microarrays are generated by fixing oligonucleotides onto a solid support

B : The oligonucleotide array slide represents thousands of preselected genes from an organism

C : The length of oligonucleotides is typically in the range of twenty-five to seventy bases long

D : The oligonucleotides don’t react with cDNA samples

Answer: d

265.Which of the following is incorrect about Classification of microarray data?

A : For microarray data, clustering analysis identifies coexpressed and coregulated genes

B : For microarray data, clustering analysis identifies coexpressed but not coregulated genes

C : For microarray data, clustering analysis identifies and coregulated but not coexpressed genes

D : Genes within a category have more similarity in expression than genes from different categories.

Answer: a

266.Which of the following is incorrect about a microarray?

A : It is a slide attached with a high-density array of immobilized DNA oligomers representing the entire genome of the species under study

B : Array of immobilized DNA oligomers cannot be cDNAs

C : Each oligomer is spotted on the slide and serves as a probe for binding to a unique complementary cDNA

D : It is the most commonly used global gene expression profiling method

Answer:b

267.Which of the following is incorrect about k-Means Clustering?

A : k-means clustering produces a dendrogram

B : It classifies data through a single step partition

C : It is a divisive approach

D : In this method, data are partitioned into k-clusters, which are prespecified at the outset

Answer: a

268.Which of the following is incorrect about Hierarchical Clustering?

A : The tree-branching pattern illustrates a higher degree of relationship between related gene groups

B : It is not similar to the distance phylogenetic tree-building method

C : It produces a treelike structure that represents a hierarchy or relative relatedness of data groups

D : In the tree leaves, similar gene expression profiles are placed more closely together than dissimilar gene expression profiles

Answer: b

269.Which of the following is incorrect about Data Collection?

A : The two-color microarray uses multiple dyes at times

B : The most common type of microarray protocol is the two-color microarray

C : The cDNAs are obtained by extracting total RNA or mRNA from tissues or cells and incorporating fluorescent dyes in the DNA strands during the cDNA biosynthesis

D : The expression of genes is measured via the signals from cDNAs hybridizing with the specific oligonucleotide probes on the microarray

Answer: a

270.A supervised analysis refers to classification of data into a set of predefined categories. For example, depending on the purpose of the experiment, the data can be classified into predefined ‘diseased’ or ‘normal’ categories.

A : True

B : False

Answer: a

271.In the analysis of microarray data–If replicated datasets are available, rigorous statistical tests such as t-test and analysis of variance (ANOVA) can be performed to test the null hypothesis that a given data point is not significantly different from the mean of the data distribution.

A : True

B : False

Answer: a

272.TIGR TM4 is a suite of multiplatform programs for analyzing microarray data.

A : True

B : False

Answer: a

273. Which of the following statement is INCORRECT about superantigens?

a) Viral or bacterial proteins

b) Endogenous by nature

c) Unique binding ability

d) Activate a large number of T-cells

Answer: b

274.In the human body, the thymus is located

A) along the femoral artery

B) in the medulla oblongata

C) in the mediastinum of the upper thorax

D) between the 19th and 20th vertebrae

Answer: c

275.The movement of fluid through the lymphactic vessels is assisted by

A) pressure from the right ventricle

B) pressure of contracting skeletal muscles

C) movement of phagaocytes such as macro phages

D) movement of red blood cells

Answer:b

276.Lack of reaction to our own human leukocyte antigens (HLAs) is known as?

A. autoimmunity

B. complement system

C. clonal selection

D. tolerance

Answer: d

277. 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. The inflammatory response

D. Mobilization of complement proteins

Answer: c

278. Which of the following white blood cells act as scavengers when they engulf and digest pathogens?

A. Macrophages

B. T cells

C. B cells

D. Lymphocytes

Answer: a

279. A cell which defends against body cells in which viruses are reproducing is

A. Exotoxin

B. Cytotoxic T cell

C. Endotoxin

D. Suppressor T cell

Answer: b

280. Which of the following is most likely to produce anaphylaxis in a susceptible individual?

A. Pollen

B. Mold

C. Dust

D. Bee sting

Answer: d

281. What type of B cell remains dormant in the body, but can respond rapidly if the same antigen appears again?

A. T cells

B. Memory cells

C. Plasma cells

D. Macrophages

Answer: b

282. The maturation of T cells and the production of particular T cell receptors occurs in the

A. thyroid gland

B. thymus gland

C. testes

D. all of these

Answer: b

283. Which of the following provide specific defense against viruses and bacteria?

A. T cells

B. B cells

C. Complement

D. inflammation

Answer: b

284. Which of these is a type of specific defense against pathogens?

A. Lymphocytes

B. Macrophages

C. Phagocytes

D. Leukocytes

Answer: a

285. In animals, blood clots serve the function of

A. consuming invading organisms

B. helping them match the background coloration of the habitat

C. stimulating production of killer T lymphocytes

D. repairing damage to the body wall

Answer: d

286. For specific antigen recognition by T cells,

A. antigen is bound by a T cell membrane antibody

B. denaturation of antigen does not reduce epitope recognition

C. MHC molecules are not required

D. antigen exposure during T cell maturation is required

Answer: b

287. Antigen, when injected in the body activates its specific lymphocytes in the

A. blood circulation

B. draining lymph nodes

C. MALT (mucosa associated

D. spleen lymphoid tissue

Answer: b

288. A molecule that can be covalently linked to a non-immunogenic antigen to make it an immunogen is called a (n)

A. adjuvant

 B. carrier

C. hapten

 D. mitogen

Answer: b

289. Which of the following is incorrect with regard to antigen epitopes?

A. An epitope may be shared by two different antigens

B. A protein molecule usually contains multiple epitopes

C. B cells bind only processed antigen epitopes

D. Epitopes may be linear or assembled

Answer:c

290. Very low doses of antigen may induce

A. hypersensitivity

B. immunological ignorance

C. low zone tolerance

D. low zone immunity

Answer: c

291. During the lag period between antigen contact and detection of adaptive immunity,

A. antigen is hidden from the immune system in macrophages

B. innate immune effectors are eliminating antigen

C. innate immunity blocks the activation of adaptive immune effector cells

D. new B and T cells with the appropriate antigen specificity must be produced in the bone marrow

Answer: b

292. Lymphocytes are activated by antigen in the

A. blood stream

B. bone marrow

C. liver

D. lymph nodes

Answer: d

293. A pathogen can be a (n)

A. agent that causes a disease

B. virus

C. bacteria

D. All of these

Answer: d

294. CD antigens

A. allow leukocytes to recognize antigen

B. are each expressed on only one cell type

C. are expressed on immune cells to mark them for separation

D. function as receptors for cytokine and CAMs

Answer: d

295. A virus vaccine that can activate cytotoxic T cells must contain

A. a high dose of virus particles

B. an adjuvant to stimulate T cell division

C. live virus

D. virus peptides

Answer: c

296. The ability of an antigen to induce an immune response does not depend on the antigen’s

A. ability to enter the thyroid

B. degree of aggregation

C. dose

D. size

Answer: a

297. The antibiotic penicillin is a small molecule that does not induce antibody formation. However, penicillin binds to serum proteins and forms a complex that in some people induces antibody formation resulting in an allergic reaction. Penicillin is therefore

A. an antigen

B. a hapten

C. an immunogen

D. both an antigen and a hapten

Answer: d

298.The lymphatic system consists of all the following except :

A. Blood

B. Lymph nodes

C. Lymphatic vessels

D. Lymph

Answer: a

299. Lymphatic capillaries resemble blood capillaries because Lymphatic capillaries

A. Have the same permeability as blood capillaries

B. Lead to the blood vena cava

C. Have a lining of endothellium

D. Are thick-walled tubes

Answer: c

300. The fluid that passes through the lymphatic vessels

A. Flow toward the lungs

B. Passes through the lymphatic vessels into the arteries

C. Enters the left ventricle of heart through the right thoracic duct

D. Moves in a single direction toward the heart

Answer: d

Paper 2: IMMUNOLOGY

Unit:- 2

1.The principal developmental organ of T cells corresponds to the

A.Thymus

B.Bone Marrow

C.Both options A and B are correct

D.None of the above

Answer: A

2. During positive selection, interactions between immature T cell receptor and self MHC:

A.Is favorable, as it ensures the compatibility necessary for antigen presentation

B.Results in T cell apoptosis

C.Prevents the development of autoimmiunity

D.None of the above as only mature T cells undergo positive selection

Answer:- A

3. During negative selection, a strong interaction between an immature T cell receptor and self-peptide:

A. Is favourable, as it ensures that antigens presented in the context of MHC are recognised by T cells

B. Rescues the T cell from programmed cell death (apoptosis)

C .Results in T cell migrating to the periphery

D. None of the above

Answer:- D

4. Immunological tolerance in T cells:

A. Only occurs in the thymus after immature T cells migrate from the bone marrow

B. Promotes autoimmunity and so causes destruction of tissues and organs

C. Because T cells that recognise self-antigens from apoptosis

D. Also involves deletion/deactivation of T cells in the thymus and periphery

Answer:- D

**5. Lymphocytes are of two types, they are**

(a) T-cells and erythrocytes

(b) Erythrocytes and Platelets

(c) T-cells and Platelets

(d) T-cells and B-cells

**Answer: (d)**

**6. Which of these immune cells are able to quickly respond post any subsequent encounter with the same antigen?**

(a) helper T cells

(b) memory cells

(c) plasma cells

(d) basophil

**Answer: (b)**

**7. Basophils, eosinophils and Neutrophils are referred to as**

(a) Platelets

(b) Astocytomas

(c) Granulocytes

(d) Buffers

**Answer: (c)**

**8. Cytotoxic T cells destroy the target cells**

(a) through injection of tumor necrosis factor

(b) by phagocytosis

(c) through insertion of perforins into the target’s membrane

(d) by releasing oxidizing agents

**Answer: (c)**

**9. This is not a cardinal sign of inflammation**

(a) redness

(b) heat

(c) swelling and pain

(d) opsonization

**Answer: (d)**

**10. \_\_\_\_\_\_\_\_\_\_\_ are released in the respiratory burst having the potent of cell-killing ability**

(a) histamines

(b) neutrophils

(c) free radicals

(d) platelets-derived growth factors

**Answer: (c)**

**11. The phenomena that initiates when a helper T cell binds with a class II MHC protein on a displaying cell is referred to as**

(a) T cell proliferation

(b) costimulation

(c) self-antigen recognition

(d) antigen proliferation

**Answer: (b)**

**12. The lymphocytes which can develop immunocompetence in the thymus is**

(a) B lymphocytes

(b) T lymphocytes

(c) NK cells

(d) None of these

**Answer: (b)**

**13. An immune response when provoked by a nonself particle is known as**

(a) immunoglobulin

(b) antibody

(c) antigen

(d) interferon

**Answer: (c)**

**14. The only blood cells which are not viewed as a part of the immune system are**

(a) fat cells

(b) glial cells

(c) osteocytes

(d) red blood cells

**Answer: (d)**

**15.The branch of biology, which involves the study of immune systems in all organisms is called\_\_\_\_\_\_\_\_\_.**

(a) Zoology

(b) Microbiology

(c) Immunology

(d) Biotechnology

**Sol: (c) Immunology.**

**16.Which of the following immunity is obtained during a lifetime?**

(a) Acquired immunity

(b) Active immunity

(c) Passive immunity

(d) None of the above.

**Sol: (a) Acquired immunity**

**17.How many types of antibodies are there?**

(a) Five.

(b) Three.

(c) Two.

(d) Four.

**Sol: (a) Five.**

**18.Which of the following cells is involved in cell-mediated immunity?**

(a) Leukaemia

(b) T cells

(c) Mast cells

(d) Thrombocytes

**Sol: (b) T cells.**

**19.Which of the following protects our body against disease-causing pathogens?**

(a) Respiratory system

(b) Immune system

(c) Digestive system

(d) Respiratory system

**Sol: (b) Immune system**.

**20.Hepatitis is an example of \_\_\_\_\_\_\_.**

(a) Subunit Vaccine

(b) Killer Vaccine

(c) Toxoids Vaccine

(d) Recombinant Vaccine

**Sol: (d) Recombinant Vaccine.**

**21.Which of the following statements is true about the IgM of humans?**

(a) IgM can cross the placenta

(b) IgM can protect the mucosal surface

(c) IgM is produced by high-affinity plasma cells

(d) IgM is primarily restricted in the circulation

**Sol:(d) IgM is primarily restricted in the circulation.**

**22. Interferons are**

(a) Cytokine barriers

(b) Physical barriers

(c) Cellular barriers

(d) Physiological barriers

**Sol: (a) Cytokine barriers.**

**23.Which of the following cells of the immune system do not perform phagocytosis?**

(a) Macrophage

(b) Neutrophil

(c) Eosinophil

(d) Basophil

**Sol: (d) Basophil**

**24. Monocytes differentiate into which kind of phagocytic cells?**

(a) Neutrophil

(b) B cell

(c) Macrophage

(d) T cell

**Sol: (c) Macrophage.**

25.Synthesis of antibodies takes place by which of the following cells?
a) Bone marrow cells
b) T-cells
c) B-cells
d) Lymph

Answer: c

26. The basic structure of antibodies are\_\_\_\_\_\_
a) Y-shaped
b) X-shaped
c) Linear
d) Hyperbolic

Answer: a

27. Name the heavy chain of immunoglobulin G.
a) μ
b) ε
c) α
d) y

Answer: d

28. What is the name of the hypervariable region of immunoglobin, which is responsible for its diversity?
a) CDR
b) Hinge region
c) Epitope
d) Agretope

Answer: a

29. Who discovered the structure of immunoglobulin by treating it with beta-mercaptoethanol?
a) Nisonoff
b) Edelman
c) Porter
d) Whittekar

Answer: b

30. Which immunoglobulin can pass through placenta?
a) IgD
b) IgE
c) IgM
d) IgG
Answer: d
31. Name the class of immunoglobulin which has a pentameric structure?
a) IgE
b) IgG
c) IgA
d) IgM
Answer: d

32. Which of these immunoglobulins is present in external secretion?
a) IgG
b) IgM
c) IgA
d) IgE
Answer: c
33. Name the class of immunoglobulin which takes part in hypersensitivity reaction?
a) IgG
b) IgE
c) IgA
d) IgM

Answer: b

35. Which of the following immunoglobulins are secretory and present in the milk?
a) IgG
b) IgM
c) IgE
d) IgA

Answer: (D)

36 The receptor that is responsible for the transport of IgAs across the epithelial barriers:
a) Poly Fc receptor
b) Poly Ig receptor
c) Poly Fab receptor
d) All of the above

Answer: (B)

37. Which of the following antibody is produced as a primary immune response and have higher valency to remove clear antigens?
a) IgA
b) IgG
c) IgM
d) IgE
Answer: (C)

38. Which of the following is the passive immunity transferred from the mother to its offspring?
a) Transplacental transfer of IgGs
b) Transfer of IgAs in the milk
c) Both a & b
d) None of the above

Answer: (B)

39. Which of the following antigen-bound antibodies bind to the Fc receptor present on the basophils and tissue mast cells, and release various pharmacoactive mediators involved in anaphylaxis?
a) IgA
b) IgD
c) IgE
d) IgM

Answer: (C)

40. The Fc receptor is a plasma membrane glycoprotein that binds to different immunoglobulin and triggers effective functions. Which of the following Fc receptor is involved in the transfer of IgG from mother to fetus
a) Fc€R
b) FcRN
c) FcµR
d) FcγR

Answer: ()

41. The immunoglobulin superfamily is the group of membrane proteins that possess one or more homologous immunoglobulin domains.

Which of the following is NOT immunoglobulin superfamily?
a) T cell receptor
b) beta2 microglobulin
c) Insulin receptor
d) Platelet-derived growth factor

Answer: (C)

42. B-cell receptors consist of membrane-bound immunoglobulin and a small heterodimer protein required for signaling. Which of the following is the heterodimer protein?
a) Igα& Igβ
b) Igµ&Igγ
c) Igα&Igγ
d) None of the Above

Answer:(A)

43 Multiple Myeloma is characterized by excessive production of immunoglobulin and the presence of a light chain in urine.

Which of the following cells are responsible for the production of immunoglobulin
a) T cells
b) B-cells
c) Plasma cells
d) Dendritic cells

Answer: (C)

44 Which of the following complement is bound by IgG?
a) C2a
b) C2b
c) C3a
d) C3b

Answer: (D)

45 Which of the following subclass of IgG molecule is the most potent activator of the complement pathway?
a) IgG1
b) IgG2
c) IgG3
d) IgG4

Answer: (C)

46 Which of the following subclass of IgG does not readily cross the placental barriers?
a) IgG1
b) IgG2
c) IgG3
d) IgG4

Answer: (B)

47 Which of the immunoglobulin isotype have the shortest half-life?
a) IgG
b) IgM
c) IgA
d) IgE

Answer: (D)

48 Which of the immunoglobulin isotype have the longest half-life?
a) IgG
b) IgM
c) IgA
d) IgE

Answer:- (A)

49.T cells (T lymphocytes) are crucial in the recognition of antigens presented by self-MHC. The T cell progenitors undergo proliferation and differentiation in the thymus and form a mature T cell. Which of the following organ is the origin of T cell progenitors?
a) Thymus
b) Hepatocytes
c) Bone marrow
d) None of the above
Answer:- C
50.What is the characteristic feature of progenitor T cells that have migrated to the thymus?
a) They express T cell receptor/CD3 complex
b) They express CD28 cell adhesion molecule
c) They express CD4 or CD8 co-receptor
d) None of the above
Answer:- D
51.Which of the following cell adhesion molecule is present in the T cell progenitors is required for homing of these cells into the thymus?
a)CD25
b) CD44
c) IL-2
d) CTLA-4
Answer- B
52. Pre- T cell receptor complex consists of the β chain of TCR & CD3 molecules that are formed during the proliferation of T cells. The function of the pre-TCR complex include except
a) signal productive rearrangement of TCR β for further proliferation
b) suppress further rearrangement of β chain (allelic exclusion)
c) prepare cells for rearrangement of α chain
d) commit T cells for CD4 or CD8 positive T cells
Answer:-D
53.Which of the following is the process for T cell development and maturation?
a) Rearrangement of T cell receptor and expression of coreceptors
b) Positive selection of thymocytes bearing receptors that are capable of binding to self-MHC molecules (MHC restriction)
c) Negative selection ensure the affinity receptor self MHC or MHC antigen complex is eliminated (self-tolerance)
d) All of the above
Answer:- D
54.During the differentiation of T lymphocytes, the double-positive cells are directed to become CD4 + T cell & CD8+ T cell which are MHC II & MHC I restricted respectively. Which of the following process may be correct for T cell differentiation?
a) Intrinsic model- multiple interactions of MHC with double-positive (CD4+ & CD8+) instruct the cell to differentiate
b) Stochastic model- CD4 or CD8 expression in switched of randomly
c) Both A and B
d) None of the above
Answer:- C
55.The activation of T cell requires the interaction of MHC/peptide of TCR/CD3 complex activation require the expression of
a) Transcription factors such as c-Fos, c-Myc, c-Jun etc.
b) Interleukins such as IL-2, IL-3, and IL-6
c) Adhesion molecules such as CD28, CTLA-4
d) All of the above
Answer:- D
56.Which of the following cytoplasmic tail of CD4 or CD8 coreceptors are required for phosphorylation of ITAM present of CD3 molecules?
a) Lck
b) ZAP70
c) LAD
d) None of the above
Answer:- A
57.The cell surface proteins on T cell bind to B7 on the antigen-presenting cells and serve as a secondary signal. Which of the following is true regarding the secondary signal?
a) CD28 is a protein that binds to B7 on APC that acts as costimulatory signals for T cell activation
b) CTLA-4 is a protein that binds to B7 on APC that acts as a suppressor signal for T cell activation
c) Both
d) None
Answer:-C
58. Which of the cytokines function in an autocrine manner and induces T cell proliferation after engagement of TCR with antigens interaction and presence of secondary signal?
a) IL-1
b) IL-2
c) IL-3
d) IL-4
Answer:- B
59.Cytokines such as IL-2, IFN-γ, TNF-β, play an important role in cell-mediated cytotoxicity, and delay hypersensitivity. Which of the following subset of T helper cells are involved in the process
a) T helper 1 CD4+
b) T helper 2 CD4+
c) T helper 1 CD8+
d) T helper 2 CD8+
Answer:- A
60. Cytokines such as IL-4, IL-5, IL-6 & IL-10 play an important role in B cell activation and humoral immune response
a) T helper 1 CD4+
b) T helper 2 CD4+
c) T helper 1 CD8+
d) T helper 2 CD8+
Answer:- B
61.The regulatory or suppressor T cells express the specific cell surface marker for its function. It is
a) CD4+ CD25+
b) CD4+ CD25-
c) CD4 - CD8 - CD25 +
d) CD4 + CD8 + CD25 +

Answer:- A

62. The activated T cells undergo activation-induced cell death (AICD). Which of the following is the effector molecule that is a response for AICD
a) IL-2
b) Fas/Fas ligand
c) IL-4
d) INF-γ
Answer:- B
63. T-cell receptor engagement with antigenic peptide MHC may induce T cell activation or the clonal anergy. Which of the following interaction favors T cell activation
a) Fas/Fas ligand
b) B-7 & CTLA-4 interaction
c) B-7 & CD28 interaction
d) B-7 & CD 8 interaction

Answer:- B

64. Which of the following is responsible for B-cell activation?
a) Infection
b) Antibody
c) Antigen
d) Allergy

Answer: c

65. What is the meaning of thymus independent B-cell activation?
a) Without the participation of T-cell
b) Do not mature in the thymus
c) Thymus would not take part in its activation
d) Affinity maturation takes place in the thymus

Answer: a

66. Which of the following acts as a coreceptor for B-cell activation?
a) CD28
b) IL-2
c) IgA
d) CD19

Answer: a

67. Out of these, which transcription factor does not take part in B-cell activation?
a) Abl
b) NF- kB
c) Jun
d) Fos
Answer: a

68. Hybridoma technology is used to produce\_\_\_\_\_\_\_\_\_\_\_
a) Interferons
b) Monoclonal antibodies
c) Antibodies
d) Immune response

Answer: b

69. Name the drug which is used to isolate hybridoma cells from the media?
a) Amphetamine
b) Opium
c) Aminopterin
d) Cocaine
Answer: c

70. Name the most commonly used monoclonal antibody for treatment of breast cancer?
a) Bradikinins
b) Prostaglandin
c) Erbutir
d) Herceptin

Answer: d

71. Mark the one which is NOT used in generating antibody diversity?
a) Combinatorial V(D)J joining
b) Juntional and insertional diversification
c) Somatic hypermutation
d) Binary fission

Answer: d

72. Tolerance of self-antigen by B-cells are known as B-cell tolerance.
a) True
b) False

Answer: a

73.The lymphoid stem cells commit for B cell lineage and differentiate into pro-B cells in bone marrow. Which of the cell surface marker is expressed in pro-B cells?
a) CD25
b) CD25R
c) CD45
d) CD45R
Answer:-D

74.Stromal cells present in the bone marrow is required for proliferation and survival of B cells. Which of the following is the function of stromal cells?
a) They interact with pro B cells via VCAM-1 ligand on the stromal cells.
b) Stromal cells secrete IL-7 that induce the pro-B cell to mature into pre-B cells.
c) Both of the above
d) None of the above
Answer:- C

75.During the B cell maturation, which of the following stage expresses surrogate light chain complexed with the heavy chain?
a) Pro-B cell
b) Pre-B cell
c) Immature B cell
d) Mature B cell
Answer:-B

76. Which of the following cell surface marker is not expressed throughout the B cell maturation process from Pro B cell to Mature B cell?
a) CD19
b) Igα/Igβ
c) CD24
d) IgD/IgM

Answer:- D

77.During the pre-B cell stage of the maturation process, the µ heavy chain rearrangement is followed by the light chain. Which of the following statements are correct EXCEPT
a) Once the heavy chain is synthesized surrogate light chain forms complex
b) The surrogate light chain/heavy chain complex formation signals are required for light chain rearrangement
c) The surrogate light chain/heavy chain complex signals prevent rearrangement of other heavy chains and enable allelic exclusion
d) The surrogate light chain remains in complex with a heavy chain until B cell maturation
Answer:-D

78.B1 B cells are self-renewing B cell subset. Which of the following is true regarding B1 B cells?
a) B1 B cells compose of 95% of the total B cell population
b) B1 B cells express numerous IgD molecules in their cell surface
c) CD5 is an indispensable component of the B1 lineage
d) B1 population responds poorly to carbohydrate antigens
Answer:-C

79.Thymus-independent antigens activate B cells without the help of T-helper cells. These molecules include
a) Lipids
b) Lipopolysaccharides
c) Polysaccharides
d) Proteins
Answer:- D

80.Which of the following is correct regarding the activation of B cells by thymus-independent antigens (TI)?
a) Exposure of TI antigen leads to a weaker response than thymus-dependent (TD) antigens.
b) The activation of B cell results in secretion of IgMs
c) TI antigens may serve as mitogens for B cell proliferation
d) All of the above
Answer:- D

81.Which of the following is not true regarding thymus-dependent (TD) antigens?
a) Induce isotype switching
b) Induce affinity maturation
c) Possess immunological memory
d) Always induce polyclonal activation of B cells
Answer:- a

82. In addition to the primary signal generated for antigen binding to B cell receptor, the thymus-dependent B cell activation requires a secondary signal. The second signal is provided by
a) Igα/Igβ
b) B cell CD40 interaction with T cell CD40L
c) CD 8 interaction with MHC molecule
d) None of the above
Answer:- B

83.The B cell receptors interact with the B cell co-receptors for effective signaling. What is the component of the B cell coreceptor complex?
a) CD19, CD 21 (CR 2) & CD81
b) CD19, CD45 & CTLA-4
c) CD10, CD22 & CD81
d) None of the above
Answer:- a

84. Which of the following cell surface marker constitutively expressed on B cells that deliver a negative signal for B cell activations?
a) CD22
b) CD40
c) Igα
d) Igβ
Answer:- A

85.A patient presented with a history of recurrent respiratory tract infection, and exhibited reduced concentration of all classed of immunoglobulins. The genetic testing shows a mutation of RAG1 & RAG2 genes. What are the function of RAG1 and RAG2 proteins?
a) Signal B cell activation
b) Rearrange heavy chains of immunoglobulins
c) Inducing Affinity maturation
d) Induce Isotype switching
Answer:- B

86. Omenn syndrome is characterized by the presence of pruritic skin, fever, lymphadenopathy, anemia, and eosinophilia. Which of the following condition may present as Omenn syndrome?
a) RAG gene deficiency
b) X-linked CD40 ligand deficiency
c) CD40 deficiency
d) None of the above
Answer:- A

87.A patient visited a hospital with a recurrent sinopulmonary infection. The laboratory evaluation showed a marked deficiency of circulating B lymphocytes, decreased immunoglobulin level. The genetic testing showed the mutation of brk gene. What is the function of brk gene?
a) Brk is involved in isotype class switching
b) Brk is tyrosine kinase that functions BCR signaling pathway
c) Brk is involved in affinity maturation
d) All of the above
Answer:- B

88.Which of the following describes an activated dendritic cell upon arriving in a lymph node?

a. Located in follicles and medulla of the lymph node

b. Associated mainly with antigen uptake and processing

c. Bears highly elaborated finger-like processes called dendrites

d. Expresses low levels of MHC class II molecules

 e. Carries out apoptosis of lymphocytes.

Answer:-C

89.Which of the following cell types is not considered a professional antigen-presenting cell?

1. Macrophage
2. b. neutrophil c.
3. B cell
4. d. dendritic cell
5. e. all of the above are professional antigen-presenting cells.

Answer:- B

**90.Which of the following systems protects our body against disease-causing microbes?**

(a) Immune system

(b) Digestive system

(c) Excretory system

(d) Respiratory system

**Sol: (a) Immune system**.

**91. Which of the following immunity is present from our birth?**

(a) Innate Immunity

(b) Active immunity

(c) Passive immunity

(d) Acquired immunity

**Sol: (a) Innate Immunity**

**92. Neutrophils, basophil, lymphocytes, eosinophil and monocytes are examples of \_\_\_\_\_\_\_\_.**

(a) Physical barrier

(b) Cellular barriers

(c) Cytokine barriers

(d) Physiological barriers

**Sol: (b) Cellular barriers.**

**93. B-cells and T-cells are two types of cells involved in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

(a) Innate Immunity

(b) Active immunity

(c) Passive immunity

(d) Acquired immunity

**Sol: (d) Acquired immunity.**

**94. The common disorders caused by a poor immune system include \_\_\_\_\_\_\_\_**

(a) Epidemic Diseases

(b) Deficiency diseases

(c) Autoimmune diseases

(d) None of the above

**Sol: (a) Epidemic diseases.**

**95. Which of the following statements is true about Passive Immunity?**

(a) This immunity causes reactions

(b) This immunity develops immediately

(c) This immunity lasts only for a few weeks or months

(d) All of the above.

**Sol: (d) All of the above.**

**96. The branch of biology involved in the study of immune systems in all organisms is called\_\_\_\_\_\_\_\_\_.**

(a) Botany

(b) Microbiology

(c) Immunology

(d) Biotechnology

**Sol: (c) Immunology.**

**97. Which of the following cells is involved in cell-mediated immunity?**

(a) T-cells

(b) B-cells

(c) Mast cells

(d) Both T and B cells

**Sol: (a) T-cells.**

**98. Which of the following conveys the longest-lasting immunity to an infectious agent?**

(a) Active immunity

(b) Passive immunity

(c) Both (a) and (b)

(d) None of the above

**Sol: (a) Active immunity.**

**99. Which of the following does not act as a protecting barrier for the body surface?**

(a) Skin

(b) Mucus

(c) Gastric acid

(d) Salivary amylase

**Sol: (d) Salivary amylase.**

**100. Which of the following cells is involved in humoral immunity?**

(a) T-cells

(b) B-cells

(c) Mast cells

(d) Both T and B cells

**Sol: (b) B-cells.**

**101. Which of the following immunity is obtained during a lifetime?**

(a) Innate immunity

(b) Active immunity

(c) Passive immunity

(d) Both (b) and (c)

**Sol: (d) Both (b) and (c).**

**102. Skin, body hair, cilia, eyelashes, the respiratory tract and the gastrointestinal tract are examples of \_\_\_\_\_\_\_\_.**

(a) Physical barrier

(b) Cellular barriers

(c) Cytokine barriers

(d) Physiological barriers

**Sol: (a) Physical barrier.**

**103. Cells Involved In Innate Immunity are\_\_\_\_\_\_\_\_\_.**

(a) Phagocytes

(b) Macrophages

(c) Natural Killer Cells

(d) All of the above

**Sol: (d) All of the above.**

**104. Which of the following immunity is called the first line of defence?**

(a) Innate Immunity

(b) Active immunity

(c) Passive immunity

(d) Acquired immunity

**Sol: (a) Innate Immunity.**

105. Cytokines regulate the intensity and duration of the immune response by activating or downregulating both innate and adaptive immune responses.

The mode of action of the cytokine is the following, **Except**?
a) Autocrine
b) Paracrine
c) Endocrine
d) Cell-autonomous

Answer:-D

106. The characteristic properties of cytokines are**:**
a) pleiotropy and redundancy
b) synergy and antagonism
c) cascade induction and amplification
d) All of the above

Answer:-D

107. Which of the following class of cytokine receptors utilize G-protein coupled receptors for its downstream function?
a) Chemokines receptor
b) Hematopoietic receptor
c) Interferon receptor
d) None of the above

Answer:-A

108.Tumor necrosis factor (TNF) is an endogenous pyrogen that induces fever.

Which of the following statement is true regarding TNF, **Except?**
a) TNF induces IL-1 production for induction of fever
b) TNF induces the synthesis of prostaglandins
c) TNF induces the production of acute-phase proteins
d) TNF level is lower in septic shock

Answer:-D

109. Interleukin-1 is an inflammatory cytokine that has the following function, **Except**?
a) Inflammation
b) Leukocyte adhesion
c) Production of acute phase reactant protein
d) All of the above

Answer:-D

110. Chemokines are the structurally homologous cytokines family that regulate lymphocyte migration. **Which of the following is an incorrect statement regarding the cytokines**?
a) Chemokines consist of characteristic N-terminal cysteine residues
b) Chemokines are produced by endothelial cells, epithelial cells, and fibroblasts
c) Chemokines are suppressed by microbes, TNF and IL-1
d) Chemokines bind to the heparan sulfate on the endothelial tissue that enables recruitment and trapping of cells into infection sites
Answer:- C

111. Interleukin 12 is a key inducer of the cell-mediated immunity in response to infection by intracellular pathogens.

Interleukin activate cell-mediated immune response by increasing the synthesis of which of the following cytokines?
a) TNF
b) Interferon-beta
c) Interferon-gamma
d) Interleukin 1
Answer:- C

112. Interferon type I mediate the early innate immune response to viral.

**Which of the following viral antigens activates the production of Type I interferon**?
a) Capsid protein
b) Double-stranded RNA
c) Double-stranded DNA
d) None of the above
Answer:-B

113.Which of the following cytokine antagonizes the function of IL-12 and the absence of specific cytokine in mice develop inflammatory bowel disease?
a) IL-1
b) IL-2
c) IL-10
d) IFN-gamma

Answer:- C

114.Which of the following cytokine is used for the treatment of the chronic granulomatous disease?
a) INF-alpha
b) INF-beta
c) INF-gamma
d) TNF
Answer:- C
115.Which of the following cytokine is used for the treatment of viral hepatitis and multiple sclerosis?
a) INF-alpha
b) INF-beta
c) INF-gamma
d) TNF

Answer:- B

116.Which of the following interleukin is responsible for T cell expansion after antigen recognition?
a) IL-1
b) IL-2
c) IL-4
d) IL-5
Answer:- B
117.Which of the following interleukin stimulate differentiation of Th2 subset and production of IgE?
a) IL-1
b) IL-2
c) IL-4
d) IL-5
Answer:- C

118.Which of the following interleukin activates eosinophil that consists of FcR for IgE?
a) a) IL-1
b) IL-2
c) IL-4
d) IL-5
Answer:-D
119.Which of the following cytokines stimulate the production of IgA that is required for mucosal immunity?
a) Interferon-gamma
b) Tumor Necrosis Factor
c) Transforming growth factor-beta
d) All of the above
Answer:- C
120.Cytokines recognize and engage with their receptors for biological action.

**121.Which of the following is the correct sequence of high-affinity to low-affinity interactions**?
a) Antibody> MHC > Cytokine
b) MHC> Antibody > Cytokine
c) Cytokine > Antibody > MHC
d) None of the above

Answer:- C

122.Naturally [acquired active immunity](https://microbeonline.com/differences-between-innate-and-acquired-adaptive-immunity/) would be most likely acquired through which of the following processes?
a. vaccination
b. drinking colostrum
c. natural birth
d. infection with disease-causing organism followed by recovery.

Answer:- D

123.Which of the following conveys the longest-lasting immunity to an infectious agent?
a. Naturally acquired passive immunity
b. Artificially acquired passive immunity
c. Naturally acquired active immunity
d. All of these
e. None of these

Answer:- C

124.Which of the following substances will not stimulate an immune response unless they are bound to a larger molecule?
a. Antigen
b. Virus
c. Hapten
d. Miligen
e. Antibody

Answer:- C

125.B and T cells are produced by stem cells that are formed in:
a. Bone marrow
b. The liver
c. The circulatory system
d. The spleen
e. The lymph nodes

Answer:- a

126.B cells mature in the……….. while T cells mature in the
a. Thymus/bone marrow and gut-associated lymphoid tissue (GALT)
b. Spleen/bone marrow and GALT
c. Bone marrow and GALT/Thymus
d. Liver/Kidneys

Answer:-C

127.Which of the following immune cells/molecules are most effective at destroying intracellular pathogens?
a. T helper cells
b. B cells
c. Antibodies
d. Complement
e. T cytolytic cells

Answer:- E

128.A living microbe with reduced virulence that is used for vaccination is considered:
a. A toxoid
b. Dormant
c. Virulent
d. Attenuated
e. Denatured

Answer:- D

129.B cells that produce and release large amounts of antibodies are called:
a. Memory cells
b. Basophils
c. Plasma cells
d. Killer cells
e. Neutrophils

Answer: C

130.The specificity of an antibody is due to
a. its valence
b. The heavy chains
c. The Fc portion of the molecule
d. The variable portion of the heavy and light chain

Answer: D

131.In agglutination reactions, the antigen is a………
in precipitation reactions, the antigen is a……………
a. whole-cell/soluble molecule
b. Soluble molecule/whole-cell
c. Bacterium/virus
d. Protein/carbohydrates
e. Protein/Antibody

Answer:- A

1. B Cells are activated by
a. [Complement](https://microbeonline.com/complement-system-pathways-functions-regulation/)
b. Antibody
c. Interferon
d. Memory cells
e. AntigenAdvertisements

132.Fusion between a plasma cell and a tumor cell creates a
a. Myeloma
b. Natural killer cell
c. Lymphoblast
d. Lymphoma
e. Hybridoma

Answer:- E

133.[Monoclonal antibodies](https://microbeonline.com/monoclonal-antibodies-types-and-applications/) recognize a single:
a. Antigen
b. Bacterium
c. [Epitope](https://microbeonline.com/epitope/)
d. B cell
e. Virus

Answer:- C

134.[Cell-mediated immunity](https://microbeonline.com/cell-mediated-immunity/)is carried out by………….. while humoral immunity is mainly carried out by………………..
a. B cells/T cells
b. Epitopes/Antigens
c. T cells/B cells
d. Antibodies/Antigens
e. Antibodies/Phagocytes

Answer:- C

135.The ability of the immune system to recognize self-antigens versus nonself antigen is an example of:
a. Specific immunity
b. Tolerance
c. [Cell-mediated immunity](https://microbeonline.com/cell-mediated-immunity/)
d. Antigenic immunity
e. Humoral immunity

Answer:- B

1) Which of the following statement is Incorrect about the vaccine development process?

a) A vaccine consists of live attenuated or killed germ cells

b) Aluminum can be used as an adjuvant in a vaccine

✔️c) Animal trials are not necessary for vaccines before going to the human trial

d) An effective and safe vaccine production can take up to 10 to 15 years

2) Which of the following is Not the example of a live attenuated vaccine?

✔️a) Tetanus vaccine b) MMR vaccine c) Varicella (chickenpox) vaccine d) Influenza vaccine

3) Subunit vaccine is all, Except

✔️a) A whole purified virus b) A purified part or pieces of the antigen

c) An expensive type of vaccine d) A Hepatitis-B vaccine

4) Which of the following statement is incorrect about the Live attenuated vaccine?

a) It is prepared using whole weakened living bacteria or virus

b) It can generate a long-term immune response with the administration of a single dose

c) Measles, MMR, and oral polio vaccine are live attenuated vaccines

✔️d) It is stable at normal room temperature

5) Which of the following statement is false regarding the important characteristics of the safe and effective vaccine?

a) It must be safe and easy to use with low side effects in humans

✔️b) It must provide immunity to at least 15% of the population

c) It must be available at a low cost

d) It must provide long-lasting immunity

6)Select the incorrect statement about the polio vaccine?

✔️a) It is only present in the form of killed or inactivated vaccine

b) Live virus vaccine against poliovirus can be given orally

c) The doses of vaccines must be given before children turn 6 years of age

d) It is present in two forms, oral polio vaccine and inactivated polio vaccine

7)Who is the Father of Passive immunity?

✔️a) Von Behring b) Carolus Linnaeus c) Edward Jenner d) Louis Pasteur

8)Active immunity is due to \_\_\_\_\_\_\_\_\_

a) Killer T-cells ✔️b) Memory cells c) Helper T-cells d) Suppressor T-cells

9) Active immunity is acquired immunity produced in an individual due to inoculation of antiserum.

a) True ✔️b) False

10)Exogenous supply of antibodies provides which of the following types of immunities?

a) Artificial Active Immunity b) Natural Active Immunity

 c) Active immunity ✔️d) Passive Immunity

11)Which of the following is the most purified form of the vaccine?

a) 1st generation b) 2nd generation ✔️ c) 3rd generation d) 4th generation

12) Passive immunity is fast but lasts for a short duration.

✔️a) True b) False

13) Which of the following is not a killed form of first-generation vaccines?

a) DPT ✔️b) Influenza vaccine c) TAB vaccine d) Salk Vaccine

14)How are modified genes introduced into the host cells for preparing third-generation vaccines?

✔️a) Introduced by DNA injection

b) Introduced by cooling and then icing the cells

c) Introduced by first giving a heat shock and then cooling the cells

d) Introduced by making new pathways for pathogens

15) When preformed antibodies are directly injected into the body, they provide which kind of immunity?

a) Natural Active immunity b) Artificial Active Immunity

 c) Natural Passive immunity ✔️d) Artificial passive immunity

16)Which of the following attacks of diseases is not going to provide any immunity to the person?

✔️a) Common cold b) Small Pox c) Measles d) Mumps

17) IgA and IgG antibodies provide which of the following kinds of immunity to the infant or foetus?

a) Natural Active immunity ✔️b) Natural Passive Immunity

c) Artificial Active Immunity d) Artificial Passive Immunity

18)Who developed the chemical techniques to synthesize polynucleotides?

a) Barbara McClintock b) James Watson

c) Fredrick Sanger ✔️d) H. Gobind Khorana

19)Which of the following enzymes in bacteria are responsible for restricting the growth of viruses?

✔️a) restriction endonuclease b) topoisomerase c) gyrase d) protease

20)EcoR1 exhibits a two-fold rotational symmetry.

✔️a) True b) False

21)Which enzyme is used to join together two different types of DNA molecules?

✔️a) ligase b) endonuclease c) exonuclease d) protease

22)The first recombinant DNA molecule was synthesized in the year \_\_\_\_\_\_\_\_\_\_\_\_\_\_

a) 1962 ✔️b) 1972 c) 1982 d) 1992

23)Which observation was made by Avery, Macleod, and McCarty?

a) DNA is a duplex molecule ✔️ b) DNA can be taken up from medium

c) DNA can denature at high temperatures d) DNA is more stable than RNA

24)Recombinant plasmids are added to a bacterial culture that has been pretreated with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ions.

a) iodine b) magnesi ✔️c) calcium d) ferric

25)Monoclonal antibodies are

a) heterogenous antibodies produced from single clone of plasma cells

✔️b) homogenous antibodies produced from single clone of plasma cells

c) both a and b d) none of these

26)Natural humoral immune response against a pathogen leads to the production of

✔️a) polyclonal antibodies b) monoclonal antibodies c) macrophages d) none of these

27)The technology used for the production of monoclonal antibodies is

a) massculture technology ✔️ b) hybridoma technology c) suspension culture d) none of these

28)Hybridoma technology was developed by

✔️a) Kohler and Milstein b) Khorana and Nirenberg

c) Khorana and Korenberg d) Beedle and Tautum

29)The hybridomas are made by

a) fusing T cells with myeloma cells ✔️b) fusing B cells with myeloma cells

c) fusing T helper cells with myeloma cells d) fusing B memory cells with myeloma cells

30)All are Mabs except

a) Rituximab b) Transtuzumab c) Infliximab ✔️d) tamoxifen

31)Mabs are

a) specific towards a paratope ✔️b) specific towards an epitope

c) specific towards an antigen d) none of these

32)Which of the following statement is incorrect regarding HAT medium

a) HAT medium is a selective medium

b) Aminiopterin in the HAT medium blocks de novo pathway of nucleotide synthesis

✔️c) Salvage pathway requires aminopterin and thymidine

d) Hypoxanthin is converted to guanine by HGPRT enzyme

33)HGPRT- mutant cells are raised by inducing mutations using

a) 5-bromouracil ✔️ b) 8-azaguanine c) colchicine d) 6-methy isocyanate

In hybridoma technology, hybrid cells are selected in

a) MS medium ✔️b) HAT medium c) x-gal medium d) Whites medium

34)Which of the following cell is made deficient of hypoxanthine guanyl phosphoribosyl transferase (HGPRT) enzyme

a) B cells b) hybrid cells ✔️ c) myeloma cells d) none of these

 35)Which of the following statement is incorrect regarding HAT selection

a) B cells are HGPRT + and can grow in HAT medium but undergoes normal cell death

b) Myeloma cells cannot grow in HAT medium as these cells lack HGPRT

c) Hybrid cell survive in HAT medium as it inherits HGPRT form B cells

✔️d) Aminopterin in HAT medium blocks de novo pathway of nucleotide synthesis only in myeloma cells

 36)Mabs are used in

a) the screening of recombinant b) diagnostic kits

c) the treatment of many cancers ✔️d) all of these

 37)The major hazards of Mabs are

a) difficult in purification b) non specificity c) all of these

 ✔️d) contamination with retroviral particles from mouse myeloma cells

38)Mabs are produced by

a) in vivo method b) suspended cell culture in fermenters

c) Immobilized cell reactors ✔️d) all of these

40)The approach (s), which is/are currently followed to produce human monoclonal antibodies, is/are known as

A. transformation of antigen specific B lymphocytes (EBV)

B. hybridization of 6-thioguanine-resistant human plasmacytoma with immune human lymphocytes

C. combination of EB Vand hybridoma techniques ✔️D. all of these

41)Fight against Bioterrorism is one of the clinical applications of monoclonal antibodies.

✔️A. True B. False

42)In human B cells and T cells are matured in the

✔️A. bone marrow and thymus respectively B. lymph nodes and spleen respectively

C. bursa and thymus respectively D. none of these

43)Preliminary clinical results with a humanized antibody against the interleukin-2 receptor have suggested the

✔️A. absence of human immune response against murine proteins (HAMA) response

B. presence of HAMA response

C. poor recognition of immunoglobulin, Ig constant regions

D. All of the above

44)In monoclonal antibody technology, tumor cells that can replicate endlessly are fused with mammalian cells that produce an antibody. The result of this cell fusion is a

✔️A. hybridoma B. myeloma C. natural killer cell D. lymphoblast

45)Small simple molecules are

✔️A. poor antigens B. rich antigens

C. moderate antigens D. heterophilic antigens

46)Which of the following is incorrect?

A. MAbs can be used to diagnose or treat diseases

B. MAbs can be used in tumor scanning C. MAbs canbe used in cancer diagnosis

✔️D. MAbs can not be used in such non-infectious diseases as those of endocrine system

47)What has become an important tool in biochemistry, molecular biology, and medicine?

A. DNA structure B. Genome sequencing

✔️C. MCA D. PCR

48)Biosensors & Microarrays are diagnostic applications of monoclonal antibodies.

✔️A. True B. False

49)Which of the following is correct?

✔️A. rabbits do not make myelomas whereas mice are unable to synthesize antibodies

B. rabbits do not make myelomas whereas mice are able to synthesize antibodies

C. rabbits make myelomas whereas mice are unable to synthesize antibodies

D. rabbits make myelomas whereas mice are able to synthesize antibodies

50)The cross linkage of antigens by antibodies is known as

✔️A. agglutination B. complement fixation C. a cross reaction D. all of these

51)Helper T cells assist in the functions of

A. certain B cells B B. certain T cells

✔️C. certain B cells and other T cells D. None of the above

52The cell fusion happens between spleen cells and \_\_\_\_\_\_\_\_\_\_\_\_\_

A. Red blood cells B. Cancer cell

✔️C. Myeloma cells D. Leukocytes

53)What do we get when we fuse Spleen cells and Myeloma cells?

✔️A. Hybridoma cells B. Red blood cells

C. Killer cells D. Cancer myeloma B-cell

54)The cross linkage of antigens by antibodies is known as

✔️A. agglutination B. complement fixation

C. a cross reaction D. All of the above

55)T cells are the source of

A. interleukin B. interferon

C. lymphotoxin ✔️D. All of the above

56)For how many weeks should you titer the Flow cytometry solution to get pure antigen

A. 1 month B. 3 weeks

C. 7 weeks ✔️ D. 2 weeks

57)An example of mosaic antigen is

✔️A. virus B. bacteria

C. a hapten D. protein

58)The approach (s), which is/are currently followed to produce human monoclonal antibodies, is/are known as

A. transformation of antigen specific B lymphocytes (EBV)

B. hybridization of 6-thioguanine-resistant human plasmacytoma with immune human lymphocytes

C. combination of EB Vand hybridoma techniques

✔️D. All of the above

59)TC cells are important in controlling

A. virus infections B. allergy

C. autoimmunity ✔️ D. all of these

60)A cytokine that stimulates the activity of B and T cells is

A. lymphotoxin ✔️ B. interlukin-2

C. interlukin-1 D. All of the above

61)What is the method to harvest monoclonal antibodies from the positive clones?

A. Subculture in the new medium B. Bioreactors

C. One a single media plate ✔️ D. Tissue culture method

62)Some cross reactions with monoclonal antibodies (MAbs) can occur. Unexpected cross reactions occur more frequently with

✔️A. Ig MAbs B. IgG C. IgA D. IgE

63)MAbs act directly when binding to cancer-specific antigens and induce an immunological response to cancer cells.

✔️A. True B. False

64)Which type of cell actually secrets antibodies?

✔️A. plasma cells B. T cells

C. macrophages D. dendritic cells

65)Who invented the process of producing monoclonal antibodies in 1975?

A. Albert Einstein B. Watson and Creek

✔️C. Georges Köhler and César Milstein D. Robert Hook

66)T cells are the source of

A. interleukin B. interferon

C. lymphotoxin ✔️ D. all of these

67)A cytokine that stimulates the activity of B and T cells is

A. lymphotoxin ✔️ B. interlukin-2

C. interlukin-1 D. all of these

68)The primary B cell receptor is

✔️A. IgD B. IgG C. IgA D. IgE

69)For which discovery did Georges Köhler and César Milstein share the noble prize in 1984?

A. Inventing genome sequencing B. Discovery the structure of DNA

✔️C. Discovery of B-cell cancer myeloma D. Discovery of the process of producing monoclonal antibodies

70)The Ig locus is about

✔️A. 2/3rd of all hybridomas B. l/3rd of all hybridomas

C. l/2nd of all hybridomas D. 1/4th of all hybridomas

71)MCA are antibodies that are non-identical.

A. True ✔️B. False

72)What had helped the study of the structure of antibodies in 1970?

A. APC B. Red blood cells

C. Killer cells ✔️D. Cancer myeloma B-cell

73)What do you add to Myeloma cells to receive HGPRT- myeloma cells?

✔️A. 8 – Azaguanine B. Azaguanine

C. Nitrogen flush D. Carbon dioxide flush

74)The EBV-hybridoma technique

A. immortalizes the donor Bcells

B. facilitates the proliferation of antigen specific B cells

C. gives much higher hybridization frequencies

✔️D. All of the above

75)In human B cells and T cells are matured in the

✔️A. bone marrow and thymus respectively B. lymph nodes and spleen respectively

C. bursa and thymus respectively D. None of the above

76)The antigen-specific lymphocytes can be immortalized by which of the following method?

A. Transfection with tumor derived DNA

B. Hybridization with a suitable lymphoid tumor cell

C. Transformation following infection by Epstein-Barr virus (EB V)

✔️D. All of the above

77)What is the clinical application of monoclonal antibodies?

A. Biosensors B. Transplant rejection

C. Infectious disease ✔️ D. Purification of drugs

78)Helper T cells assist in the functions of

A. certain B cells B. certain T cells

✔️C. certain B cells and other T cells D. none of the above

79)The hybrid cells can be propagated

A. in tissue culture B. as ascites in peritoneal cavity of mice

✔️C. both (a) and (b) D. none of these

80)In immuno-inflammatory diseases such as hemolytic anaemia, eczema etc.,

✔️A. T8 cells are greatly reduced B. T8 cells are greatly increased

C. T4 cells are greatly reduced D. T4 cells are greatly increased

81)Bispecific antibodies can bind with their Fab regions both to target antigen and to \_\_\_\_\_\_\_\_\_\_\_\_\_

A. Other antibodies ✔️B. An effector cell

C. Proteins around D. Prostaglandins

82)It is highly valued if the lymphocytes derived from the lymph node or tonsil tend to undergo fusion at

✔️A. high frequencies B. moderate frequencies

C. low frequencies D. at no frequency

83)MAbs was modified for delivery of a toxin, radioisotope and \_\_\_\_\_\_\_\_\_\_

A. Enzymes B. Hormones C. Drugs ✔️D. Cytokine

84)Which of the following immunoglobulins makes the largest percentage in breast milk?

(a) IgM (b) IgD (c) IgG ✔️(d) IgA

85)Transplanted graft may be rejected due to

✔️(a) cell-mediated immune response (b) humoral immune response

(c) innate immune response (d) passive response

86)Oral polio drops contain

(a) harvested antibodies (b) activated pathogens

✔️(c) attenuated pathogens (d) gamma globulins

87)Antibodies are

(a) prostaglandins (b) steroids (c) lipoproteins ✔️(d) glycoproteins

88)Interferons are

(a) antibiotic proteins ✔️ (b) antiviral proteins

(c) antigen proteins (d) all of the above

89)Globulins of the blood plasma are responsible for

✔️(a) defence mechanisms (b) blood clotting

(c) oxygen transport (d) osmotic balance

90)Which of the following antibodies is predominantly present in tears, saliva and mucous

(a) IgM (b) IgG (c) IgE ✔️(d) IgA

91)The class of antibodies, which can cross placenta is

(a) IgD (b) IgA ✔️(c) IgG (d) IgM

92)Antigen binding sites are present in

✔️(a) Fab regions of an antibody (b) Fc region of an antibody

(c) only in the light chain (d) only in the heavy chain

93) Type I hypersensitivity involves

(a) IgD (b) IgM ✔️(c) IgE (d) IgG

94)Monoclonal antibodies are

a) heterogenous antibodies produced from single clone of plasma cells

✔️b) homogenous antibodies produced from single clone of plasma cells

c) both a and b

d) none of these

95)Natural humoral immune response against a pathogen leads to the production of

✔️a) polyclonal antibodies b) monoclonal antibodies

c) macrophages d) none of these

96The technology used for the production of monoclonal antibodies is

a) massculture technology ✔️ b) hybridoma technology

c) suspension culture d) none of these

97Hybridoma technology was developed by

✔️a) Kohler and Milstein b) Khorana and Nirenberg

c) Khorana and Korenberg d) Beedle and Tautum

98)The hybridomas are made by

a) fusing T cells with myeloma cells

✔️b) fusing B cells with myeloma cells

c) fusing T helper cells with myeloma cells

d) fusing B memory cells with myeloma cells

99)All are Mabs except

a) Rituximab b) Transtuzumab c) Infliximab ✔️d) tamoxifen

100)Mabs are

a) specific towards a paratope ✔️b) specific towards an epitope

c) specific towards an antigen d) none of these

101)Which of the following statement is incorrect regarding HAT medium

a) HAT medium is a selective medium

b) Aminiopterin in the HAT medium blocks de novo pathway of nucleotide synthesis

✔️c) Salvage pathway requires aminopterin and thymidine

d) Hypoxanthin is converted to guanine by HGPRT enzyme

102)HGPRT- mutant cells are raised by inducing mutations using

a) 5-bromouracil ✔️ b) 8-azaguanine

c) colchicine d) 6-methy isocyanate

103)In hybridoma technology, hybrid cells are selected in

a) MS medium ✔️b) HAT medium

c) x-gal medium d) Whites medium

104) Which of the following cell is made deficient of hypoxanthine guanyl phosphoribosyl transferase (HGPRT) enzyme

a) B cells b) hybrid cells ✔️c) myeloma cells d) none of these

105)Which of the following statement is incorrect regarding HAT selection

a) B cells are HGPRT + and can grow in HAT medium but undergoes normal cell death

b) Myeloma cells cannot grow in HAT medium as these cells lack HGPRT

c) Hybrid cell survive in HAT medium as it inherits HGPRT form B cells

✔️d) Aminopterin in HAT medium blocks de novo pathway of nucleotide synthesis only in myeloma cells

106) Mabs are used in

a) the screening of recombinants b) diagnostic kits

c) the treatment of many cancers ✔️d) all of these

107) The major hazards of Mabs are

a) difficult in purification

✔️b) contamination with retroviral particles from mouse myeloma cells

c) non specificity d) all of these

108) Mabs are produced by

a) in vivo method b) suspended cell culture in fermenters

c) Immobilized cell reactors ✔️d) all of these

109) The approach (s), which is/are currently followed to produce human monoclonal antibodies, is/are known as

A. transformation of antigen specific B lymphocytes (EBV)

B. hybridization of 6-thioguanine-resistant human plasmacytoma with immune human lymphocytes

C. combination of EB Vand hybridoma techniques

✔️D. all of these

110) Some cross reactions with monoclonal antibodies (MAbs) can occur. Unexpected cross reactions occur more frequently with

✔️A. Ig MAbs B. IgG C .IgA D .IgE

111) In monoclonal antibody technology, tumor cells that can replicate endlessly are fused with mammalian cells that produce an antibody. The result of this cell fusion is a

✔️A .hybridoma B. myeloma C. natural killer cell D. lymphoblast

112) In human B cells and T cells are matured in the

✔️A. bone marrow and thymus respectively B. lymph nodes and spleen respectively

C. bursa and thymus respectively D. none of these

113)An example of mosaic antigen is

✔️A. virus B. bacteria

C. a hapten D. protein

114) The EBV-hybridoma technique

A. immortalizes the donor Bcells

B. facilitates the proliferation of antigen specific B cells

C. gives much higher hybridization frequencies

✔️D. all of the above

115) TC cells are important in controlling

A. virus infections B. allergy

C. autoimmunity ✔️D. all of these

116) Which type of cell actually secrets antibodies?

✔️A. plasma cells B. T cells

C. macrophages D. dendritic cells

117) Monoclonal antibodies are routinely used in all of the following EXCEPT

A) the classification of leukemias.

B) the identification and epidemiological study of infectious microorganisms.

C) the identification of tumor antigens.

✔️D) the manipulation of the immune response.

1. Which Of The Following Is The Cause Of Autoimmune Diseases?
A) Immune System Begins To Attack Its Cells And Tissues
B) Immune System Starts Producing Cells And Tissues
C) Immune System Fails Completely
D) Immune System Produces Wbcs In A Huge Number
2. Which Of The Following Is Not An Autoantigen?
A) Rbcs
B) Liver Cells
C) Acetylcholine Receptors
D) Brain
3. Which Of The Following Is Not An Autoimmune Disorder?
A) Rheumatoid Arthritis
B) Multiple Sclerosis
C) Influenza
D) Chronic Hepatitis
4. Muscular Dystrophy Is An Autoimmune Disease While Myasthenia Gravis Is A Genetic Disorder.
A) True
B) False
5. N Which Of The Following Diseases The Autoantigens Are Β-Cells?
A) Myasthenia Gravis
B) Insulin-Dependent Diabetes
C) Multiple Sclerosis
D) Chronic Anaemia
6. In Multiple Sclerosis, The Antibodies Attack The ‘Node Of Ranvier’ Of The Nerve Cells.
A) True
B) False
7. Which Of The Following Is Not An Immune System Disorder?
A) Allergies
B) Immunodeficiency
C) Genetic Disorders
D) Autoimmune Diseases
8. Which Of The Following Is An Autoimmune Disease?
A) Addison’s Disease
B) Syphilis
C) Tuberculosis
D) AIDS
9. Which Of The Following Statements Is Incorrect Regarding Rheumatoid Arthritis?
A) It Is An Autoimmune Disorder
B) It Occurs Only In Old People
C) Inflammation Of Synovial Fluid
D) Diagnosed By The Presence Of Rheumatoid Factor
10. In Myasthenia Gravis, Antibodies Start Attacking The \_\_\_\_\_\_\_\_\_\_\_\_\_\_
A) Proprioceptors
B) Chemoreceptors
C) Acetylcholine Receptors
D) Cortisol Receptors

**11. Which Of The Following Antibody Involve In Type-I Hypersensitivity Reaction?**

* **Ige**

 **12. Which Immunoglobin Is React With Allergens**

* **Ige**

 **13. Rheumatoid Arthritis Is A Example Of**

* **Type III Hypersnsitivity**

 **14. Which Of The Following Part Of The HIV Is Bind To CD4 Receptor Of Of T Per Cell?**

* **Gp120**

 **15. HIV AIDS Is A \_\_\_\_ Disease.**

* **Immunodeficiency**

 **16. \_\_\_\_\_\_\_\_\_\_ Protein Transfer Thyroxine & Retinol.**

* **TTR**

 **17.  Which Of The Following Is Not A Type Of Cellular Adaptation?**

* **Superplasia**

 **18. The Common Cause Of Atrophy Are As Follows Except**

* **Stiumulation Of Endocrine Hormone Release**

**19. Which Enzymes Are Responsible For Removal Of Free Radical**

* **Superoxide Dismutase**
* **Peroxidase**
* **Catalase**

**20. Cell Swelling Is A Result Of**

* **Decreased Activity Of Sodium Pump**

 **21. Which Of The Following Is Not An Auutoantigen**

 **- Brain**

 **22.Which Of The Following Is Not An Autoimmune Disorder**

 **- Influenza**

**23. In Which Of The Following Diseases The Autoantigens Are B – Cells**

 **- Insulin – Dependent Diabetes**

**24.Which Of The Following Is Not An Immune System Disorder**

 **- Genetic Disorders**

**25. Which Of The Following Is An Autoimmune Disease \**

 **- Addison”S Disease**

**26. In Myasthenia Gravis, Antibodies Start Attacking The \_\_\_\_\_\_\_\_\_\_**

 **- Acetylcholine Receptors**

**27. Which Of These Autoimmune Diseases Can Be Cured**

 **- Lupus , Scleroderma . None Of The Above**

**28. Autoimmunity Is As A Result Of**

 **- Inappropriate Responses To Self Antigens**

**29.Addison’s Disease Is An Autoimmune Disorder Affecting**

 **- Adrenal Cells**

**30. Multiple Sclerosis Is An Autoimmune Disorder Affecting**

 **- Brain**

**31.An Example Of Systemic Autoimmune Disease Is**

 **- Rheumatoid Arthritis**

 **32. Rheumatoid Arthritis Is An Autoimmune Disorder Affecting**

 **- Connective Tissue**

**33. Pernicious Anemia Is An Autoimmune Disorder Affecting**

 **- Erythrocytes**

**34. Which Of The Following Is The Cause Of Autoimmune Diseases.**

 **- Immune System Begins To Attack Its Cells And Tissues.**

**35.**Which Of These Is An Autoimmune Disease?

-  Type 1 DiabetesB. Rheumatoid ArthritisC. Psoriasis

36. If You Have An Autoimmune Disease, What Happens With The Immune System?

* Antibodies From Your Immune System Mistakenly Attack Tissues In The Body

37. Autoimmune Diseases Strike Which Group More Often?

 - Women Older Than 50

38. What Tissues, Organs, Or Body Systems Can Be Affected By Autoimmune Diseases?

 - Skin Joints

39. Lupus Is More Common Among Women In Which Ethnic Group?

 - African Americans

 40. How Does A Person Develop An Autoimmune Disease?

 - It May Be A Complication Of An Existing Infection, Such As Strep Throat

41. Why Are Some Autoimmune Diseases Difficult To Diagnose?

 - Symptoms May Come And Go, Making It Hard To Pinpoint The Problem

42.  Which Of These Autoimmune Diseases Can Be Cured?

 - Multiple Sclerosis

43. Which Of The Following Can Be Attributed To Pasteur ?

 - First Attenuated Vaccines

44. Which WBC Is Capable Of Further Differertiation In Tissues ?

 - Monocyte

45 . The Cells That Metchnikoff First Observed Are Associated With Which Phenomenon ?

* Innate Immunity

46. Where Are All Undifferentiated Lymphocytes Made ?

- Bone Marroow

47. Which Of The Following Statements Is True Of NK Cells ?

 - They Kill Target Cells Without Prior Exposure To Them

48. Which Cells Is The Most Potent Phagocytic Cell In The Tissue ?

 - Dendritic Cell

49. The Ability Of An Individual To Resist Infection By Means Of Normally Present Body Functions Is Called

 - Innate Immunity

50. A Cell Characterized By A Nucleus With Two To Five Lobes A Diameter Of 10 To 15 Um And A Large Number Of Neutral Staining Granules Is Identified As A (N)

 - Neutrophil

51.Which Of The Following Is A Primary Lymphoid Organ ?

 - Thymus

52. What Type Of Cells Whould Be Found In A Primary Follicle ?

 - Unstimulated B Cells

53. Which Of The Following Distinguishing Feature Of B Cells ?

- Presence Of Surface Antibody

54.Where Do Lymphocytes Mainly Come In Contact With Antigens ?

 - Secondary Lymphoid Organs

55.Which Of The Following Is Found On The T Cell Subset Known As Helpers ?

- CD4

56. Which Of The Following Statements Best Characterizes Adaptive Immunity ?

 - Specificity For Each Individual Pathogen

 57. The Main Function Of T Cells In The Immune Response Is To?

 - Produce Antibodies.

58. Which Of The Follwing Is A Part Of Humoral Immunity ?

 - Neutralization Of Toxins By Serum

59. Immunity Can Be Defined As ?

 - The Condition Of Being Resistannt To Disease.

60. A Blood Cell That Has Reddish Staining Granules And Is Able To Kill Large Parasites Describes ?

 - Eosinophills

61.which of the following statements best describes a Lymph node ?

 - it collects flud from the tissues.

62.Antigenic groups identified by different sets of antiibodies reacting in a similar manner to certain standard cell lines best describes?

 - clusters of differentiation

63. Structural analog/antimetabolite: cytotoxic immunosuppressive drug:

 A) vincristine
 B) cyclophosphamide
 C) azathioprine
 D) none of the above

64.  Immunomodulatory sedative drugs used in the management of some forms of leprosy; also effective in managing skin manifestations of lupus erythematosus

 A) tacrolimus
 B) cyclophosphamide
 C) thalidomide
 D) buproprion
 E) diazepam

65. Drug of choice in treating autoimmune hemolytic anemia:

 A) cyclophosphamide plus factor XIII
 B) Rho(D) immune globulin
 C) prednisone
 D) OKT3 monoclonal antibody
 E) cyclosporine

66. Interferes with cell cycle of activated lymphoid cells;example of the first class of hormonal agents recognized have lympholytic properties:

 A) cyclosporine
 B) tacrolimus
 C) IFN-alpha
 D) dexamethasone
 E) 15-desoxyspergualin

67. Useful in management of idiopathic thrombocytopenic purpura refractory to prednisone

 A) dactinomycin
 B) vincristine
 C) cyclophosphamide
 D) azathioprine
 E) all of the above

68. Drug of choice in treating hemolytic anemia of the newborn:

 A) cyclosporine
 B) prednisone
 C) OKT3 monoclonal antibody
 D) tacrolimus
 E) Rho(D) immune globulin

69. Clinical uses of interferon:

 A) cancer treatment
 B) multiple sclerosis
 C) both
 D) neither

70. Type 1 hypersensitivity: cross-linking of membrane-bound IgE on blood basophils or tissue mast cells by antigen

 A) true
 B) false

71. immunomodulating agents:

 A) thymosin
 B) interferon beta
 C) interferon-gamma
 D) TNF alpha
 E) all the above

72. Class 1 MHC molecules present mainly fragments of cellular antigens

 A) true
 B) false

73. Inhibits antigen recognition of B-cell

 A) prednisone
 B) azathioprine
 C) methotrexate
 D) Rho(D) immune globulin
 E) tacrolimus

74. Antilymphocyte antibodies:

 A) binds to the surface of T cells
 B) acts mainly on small, long-lived peripheral lymphocytes
 C) may be used in induction of immunosuppression
 D) may be obtained by hybridoma technique for monoclonal antibody generation
 E) all of the above

75. Clinical uses of immunosuppressive drugs:

 A) organ transplantation
 B) hemolytic disease of the newborn
 C) autoimmune disorders
 D) A & C
 E) A, B & C

76. The study of diagnosis and treatment of cancer is ?

 - oncology

77.Increase in number of normal cell is called ?

 - Hyperplasia

78.Which of the following is a feature of cancer ?

 - cell grows more rapidly ,invade adjacent tissues , tumor formation

79.Which cancer can be completely eradicated by radiation

 - cancer of skin

80.which agents are used in passive immunotherapy of cancer?
a) Antigens
b) Antibodies
c) Anticoaggulants
d) Antacids

81. Conventional therapies like chemosurgery kill a large number of healthy cells in addition to cancer cells.
a) True
b) False

82.Spontaneous remissions were studied by which of the following scientists?
a) Barbara McClintock
b) William Coley
c) Fredrick Sanger
d) James Watson

83. Which of the following is a humanized antibody?
a) Doxorubicin
b) Sulforaphane
c) Vimentin
d) Herceptin

84. Which drug was approved in 1997 for the treatment of non-Hodgkin’s B-cell lymphoma?
a) Neosporin
b) Rituxan
c) Vectibix
d) Arzerra

85.The drug Vectibix is directed against \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Her2 receptor
b) Her3 receptor
c) EGF receptor
d) EGF

86.Adoptive immunotherapy involves the person’s own immune system for treatment against cancer.
a) True
b) False

87.Which immune cells are generally used in the treatment of cancer using adoptive immunotherapy?
a) Mast cells
b) Dendritic cells
c) Neuronal cells
d) Malignant cells

88.Which of the following disease is caused by a chromosomal translocation?
a) Chronic myelogenous leukemia
b) Hodgkin’s B-cell lymphoma
c) Alzheimer’s disease
d) Parkinson’s disease

89. Angiogenesis is the process of formation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) cancer cells
b) blood vessels
c) tissues
d) immune cells

90.Cancer cells promote angiogenesis by secreting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) antigens
b) antibodies
c) growth factors
d) necrosis factors

91. Endostatin is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) angiogenesis inhibitor
b) angiogenesis promoter
c) transcription factor
d) cell surface recepto

92.which is the feature of benign tumor

 - contain within a capsule

93.Malignant tumor of bones is called

 - osteogenic sarcoma

94. If the tumor cells are completely undifferentiated ?

 - Anaplasia

95.multiple myeloma can be detected by presence of ------ in urine

 - Bence Jones

96.Increase In size of normal cell is known as ?

 - hypertrophy

97.When tissues are taken and examined under microscope it is known?

 - Biopsy

98.Oncogenes do not Express usually due to Presence of

 - tumor suppressor genes

99.Cancer of B lymphocytes is called as

 - Myeloma

100.Basic difference between a cancer cell and normal cell

 - Cancer cell divide do not differentiate like normal cell

101.Main reason of lungs cancer is

 - coal mining

102.Blastoma is a cancer involving which tissue

 - embryonic tissue

103.Which one is used in the treatment of thyroid cancer

 - I – 131

104.Migration of cancerous cells to different parts of body is

 - metastasis

105.Genes which convert proto- oncogenes into oncogenes

 - tumor suppressor genes

 106.Which of the following is an active cell death process?
a) Apoptosis
b) Necrosis
c) Senescence
d) Lysis

107.Apoptosis can’t kill which of the following?
a) Cell infected with viruses
b) Cell with DNA damage
c) Cancer cells
d) Immune cells

108.  Which of the following is an anti apoptotic protein?
a) Bcl-Xs
b) Bfl 1
c) Bim
d) NOXA

109.Which of the following cell organelle actively participates in animal apoptosis?
a) Vacuoles
b) Chloroplast
c) Nucleus
d) Mitochondria

110.Which of the following can trigger cytochrome release from mitochondria?
a) Bad
b) Bid
c) Akt
d) Smac

111. Which of the following is an inhibitor of apoptosis?
a) Caspase
b) IAP
c) SMAC
d) DIABLO

112. Caspases belong to the class of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Serine proteases
b) Cystine proteases
c) Aspertate proteases
d) Hydrolases

113.Caspases can be activated by\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Cytochrome
b) IAP
c) DNase
d) Rnase

114.Caspase 8 is an effector caspase.
a) True
b) False

115. Which of the following is not a characteristic of apoptotic animal cell?
a) Trasglutaminase forms a net like structure
b) Cell membrane blebbing
c) Mitochondria swollen
d) DNA marginization and fragmentation

116. What is the unusual characteristic of cell membrane seen in apoptotic cell?
a) Cell membrane ruptures
b) Cell membrane channels stop working
c) Cell membrane exposes phosphatidyl serine on the outer side
d) Cell membrane exposes the cholesterol and lipid rafts on the outer side

117. Akt doesn’t phosphorylate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Bad
b) FOXO
c) Gsk -3
d) Caspases

118. TRAIL interacts with \_\_\_\_\_\_\_\_\_\_\_ receptor.
a) Fas
b) TNF
c) DR4
d) CMR1

119.  Which of the following is not an RHG family protein?
a) Hid
b) Grim
c) Sickle
d) Rad51

120. If you inject Bcl-2 within a cell it will not undergo apoptosis.
a) True
b) False

121. Which of the following is not a part of DISC complex?
a) Fas Ligand
b) Fas receptor
c) Cytochrome
d) Procaspase 8

122. h of the Bcl-2 family protein can caspase 8 act on?
a) Bad
b) Bid
c) Bim
d) Bax

123. P53 has a high turnover number.
a) True
b) False

124. Epstein Barr virus can cause cancer by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Producing p53 binding protein
b) Inducing cytochrome release from mitochondria
c) Producing anti-apoptotic protein
d) Producing adaptor protein in excess

125. An E6 factor which binds to p53 and thus causes cancer is seem in case of \_\_\_\_\_\_\_\_\_\_\_\_\_
a) Epstein Barr Virus
b) Human Papilloma Virus
c) Melanoma
d) Leukemia

126. Which caspase is activated in the ER pathway of apoptosis?
a) Caspase 3
b) Caspase 7
c) Caspase 8
d) Caspase 12

127. Downregulation of caspase 9 is seen in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Melanoma
b) Breast cancer
c) Colorectal cancer
d) Lung cancer

128. Which of the following is true for cells with DNA damage?
a) P53 binds to Mdm 2
b) Mdm2 is prosphorylated
c) p53 acts as transcription factor for Bad
d) p53 is ubiquinylated

129. Downregulation of caspase 3 can lead to ovarian cancer.
a) True
b) False

130. P53 accumilation activates which polymerase to repair DNA damage?
a) Pol alpha
b) Pol Beta
c) Pol kappa
d) Pol eta

131. Decoy molecules which binds to Fas L are seen in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Lung cancer
b) Melanoma
c) Breast cancer
d) Ovarian cancer

132. he target for Obimerson sodium is \_\_\_\_\_\_\_\_\_
a) P53
b) Bad
c) Bcl-2
d) IAP

134. enovins are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
a) Bcl2 sequestering
b) Cytochrome releasing
c) Mutant p53 repairing
d) p53 activating

135.  Pikan083 can act on p53 mutants and induce cancer.
a) True
b) False

136. This is an extracellular messenger of apoptosis ?

 - Tumor necrosis factor

137.This is concerned with the intrinsic pathway of apoptosis ?

 - cytochrome c

138.Apoptotic bodies can be recognized with the presence of these on the surface ?

 - phosphatidylserine

139.Apopotic cells detach due to the inactivation of this

 - FAK

140.Shrinking of nucleus is caused when this inactivates ?

 - lamin

141.This cell organelle participates actively in animal apoptosis ?

 - mitochondria

142.This can stimulate cytochrome release from mitochondria

 - BID

143.This can not be killed by apoptosis ?

 - cancer cells

144. This is an anti apoptotic protein ?

 - BFI 1

145.This is an active cell death process ?

 - apoptosis

146. Animals that have had their DNA manipulated to possess and express an extra (foreign) gene are known as \_\_\_\_\_\_
a) transgenic animals
b) animals
c) infected animals
d) Bt animals

147. Today transgenic model exist for disease like \_\_\_\_\_\_
a) cold
b) fatigue
c) cystic fibrosis
d) fever

148. Transgenic animals have \_\_\_\_\_\_
a) foreign protein
b) foreign gene
c) foreign lipid
d) foreign amino acid

149.Transgenic animals can be designed to study the change in \_\_\_\_\_\_\_
a) serum
b) urine
c) gene
d) saliva

150. Transgenic models exist for \_\_\_\_\_\_\_\_ disease.
a) cold
b) cough
c) HIV
d) cancer

151. By studying the effects of gene one can tell \_\_\_\_\_\_ role of a gene in the body.
a)chemical
b)biological
c) psychological
d) physiological

152. Transgenic animals are design to \_\_\_\_\_\_\_ our understanding of the role of genes disease.
a) decrease
b) increase
c) similar
d) equalize

153. Transgenic animals serve as \_\_\_\_\_\_ for human for better understanding of genes and their functions.
a) probe
b) clone
c) model
d) organism

154. Transgenic animals are used to study what is the function of \_\_\_\_\_\_ gene.
a) foreign
b) regular
c) same
d) old

155.Transgenic models exist for \_\_\_\_\_\_\_\_ disease.
a) cough
b) pneumonia
c) rheumatoid arthritis
d) influenza

156. 95% transgenic animals are \_\_\_\_\_\_
a) sheep
b) rabbits
c) pigs
d) mice

157. Today transgenic model exist for disease like \_\_\_\_\_\_
a) fatigue
b) influenza
c) Alzheimer’s
d) pneumonia

158.  Transgenic animals are used for the production of biological products.
a) True
b) False

159.Biological products can be created with the help of transgenic animals by the introduction of a portion of \_\_\_\_\_\_
a) protein
b) gene
c) carbohydrate
d) fats

160. What is used to treat emphysema?
a) Anti-pepsin
b) α-1-antitrypsin
c) Growth hormone
d) Insulin

161. The first transgenic cow was produced in?
a) 1983
b) 1995
c) 1997
d) 2000

162.  The name of the first transgenic cow was \_\_\_\_\_
a) Dolly
b) Mary
c) Elle
d) Rosie

163.The first transgenic cow produced \_\_\_\_\_\_ grams protein per liter of milk.
a) 5
b) 2.4
c) 3
d) 3.4

164. The milk produced by transgenic cow contained \_\_\_\_\_\_\_ protein.
a) insulin
b) human alpha-lactalbumin
c) human albumin
d) casein

165. Attempts are being made to treat \_\_\_\_\_\_\_\_ using transgenic animals.
a) emphysema
b) fatigue
c) phenylketonuria
d) fever

166.  The milk produced by transgenic cows containing human alpha-lactalbumin is not more balanced than natural cow milk.
a) True
b) False

167. Attempts are being made to treat \_\_\_\_\_\_\_\_ using transgenic animals.
a) cough
b) fever
c) cystic fibrosis
d) fatigue

168. Most widely used animal for testing vaccine safety is \_\_\_\_\_\_\_
a) mice
b) rabbits
c) pigs
d) monkeys

169. How much % of transgenic mice is used?
a) 80%
b) 75%
c) 95%
d) 85%

170. Which animal is used for testing the safety of vaccines before they are used on humans?
a) Monkey
b) Cattle
c) Pigs
d) Mice

171.  Monkeys are being used to test the safety of \_\_\_\_\_\_\_ vaccine.
a) flu
b) polio
c) headache
d) fatigue

172. Which animal is being developed to replace the monkeys for vaccine testing?
a) Transgenic mice
b) Transgenic cow
c) Transgenic pig
d) Transgenic rabbit

173. Some types of variation are due to changes in the genetic material. What is this type of change called ?

 - Mutation

174.Cloning is a method by which number of genetically identical organisms are derived from a single organism by ?

- vegetative propagation

175.IF Controlled inactivation of a gene is carried out and some of the consequences when inactivation of a target gene is deleterious are avoided. It is referred as -----------

 - Conditional Gene Targeting

176.The technique , mainly used for the diagnosing birth defects in the fetus by means of needle, is called ?

 - Amniocentesis

177.DNA is microincfected into the fertillzed egg ?

 - Before the fusion of male and female Nuclei

178.Which of the following statements is false ?

 - Discontinuous variation is influenced by the enviroment

179. When the cells are enucleated and centrifuged nuclei ?

 - Detach from cell and settle at the bottom

180.Superovulation is an ?

 - Increased ovulatory response by external hormonal therapy

181.which of the following best describes artifical insemination ?

 - Taking the sperm and placing it directly

182.Cloning is a method by which number of genetically identical organisms are derived from a single organism by ?

 - Vegetative Propagation

183.Which of the following statement is correct ?

 - Variation is caused by genes

184.Which of these carries the thousands of genes needed to allow animal and plant needed to allow animal and plant cells to pass on inherited characteristics ?

- Chromosomes

185.Animal pharming can be defined as ?

 - programming animals to produce novel products

186.fot the transfer of whole individual chromosomes, they are isolated from the cells at ?

 - Metaphase

187.Transfection refers to which of the following ?

 - Introduction of foreign gene in to a cell

188.Some types of variation are due to changes in the genetic material . What is this type of change called ?

 - Mutation

189.Which of the following is the process of choosing parent organisms for the characteristics that is wanted in their offspring ?

 - selective breeding

190.Animal pharming can be defined as ?

 - programming animals to produce novel products

191.Which of these carries the thousands of genes needed to allow animal and plant cells to pass on inherited characteristics ?

 - Chromosomes

192. Transfection refers to which of the following ?

 -Introduction of foreign gene to a cell ‘

193.Which of the following is the word used to describe what happen when the nucleus of a sperm joins with the nucleus of an egg cell ?

- Ferillsation

194.chromosomes may be isolated from metaphase cells by ?

 - hypotonic lysis

195.When a fertillzed egg cell develops into an embryo the entropy of the living system ?

 - Decreases

196.Fab stands for

a) fragment antibody binding

b) fragment antigen binding

c) fragment antibody or antigen binding

d) fragment affinity binding

197.Clearance of antigens by antibodies involve

a) neutralization and agglutination

b) opsonisation and complement activation

c) precipitation

d) all of these

 198.SCID can occur due to the absence of an enzyme

a) adenosine deaminase

b) guanosine deaminase

c) phosphorylase

d) thymidine deaminase

199.Classical pathway of complement system is activated by

a) antibody-antigen complexes

b) antigen

c) antigenic peptides

d) antigens bound to MHC

200.Production of transgenic animals require transfection of ?

- Eggs or embryos .