MIDTERM PAST PAPERS

MICROBIOLOGY

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IMMUNOLOGY:

1- Which of the following is an example of microbial anti-peptides?

A) C3b
B) Mucin
C) Pentraxin
D) Defencins

Answer: D

2- Which receptor is encoded by somatic DNA recombination:

A) T-cell Receptor
B) CD20
C) B-cell Receptor

Answer: C

3- Which of the following is considered as soluble pattern recognition molecule?

A) NOD - like receptors
B) C3
C) Toll - like receptors
D) Scavenger receptors

Answer: B

4- Which type of cell bound receptor can recognize LPS?

A) NOD-like recpetors
B) TLR4
C) Scavenger receptors
D) TLR1

Answer: B

5- Which of the following is considered as a soluble pattern recognition molecule?

A) MBL
B) C-type lectin-like receptor
C) RIG-like receptor

Answer: A

6- The site where the production of memory B-cell occurs:

Answer: Germinal centers

7- On of the characteristics of the second response:

Answer: Secrets more antibodies

8- The incorrect answer about immature dendritic cells:

Answer: its primary function is antigen presentation

9- Which of the following Antibodies occurs as a pentameric structure?

A) IgM
B) IgG
C) IgA
D) IgE
E) A+C

Answer: A

10- Wrong about neutrophils:

A) it is stimulated by G-CSF
B) It has short half-life with only few hours
C) it is part of the mononuclear phagocytic system
D) mainly found in the blood and migrate to tissues following inflammation

Answer: C

11- Which of the following best activate NAÏVE CD8 lymphocytes:

A) Conventional Dendritic cells
B) Plasmacytoid Dendritic cells
C) Macrophages
D) B cells

Answer: A

12-Which of the following regulators inhibits C3 convertase?

A) CD14
B) CD59
C) FH
D) CD46

Answer: D

13-When we inhibit alternative pathway convertase, all of the following would decrease EXCEPT:

A) C3a
B) C5a
C) C4b2b
D) C3b
E) MAC or TCC

Answer: C

14-Which of the following is wrong about innate immune system:

A) it is existed in Plants
B) Very ancient form of immunity
C) it takes days to weeks to perform its function

Answer: C

15- Which of the following cells will be the last cell to perform its function in skin pathogen invasion:

A) Natural killer cells
B) Naïve CD8 Lymphocytes
C) Interepithelial Lymphocytes
D) Macrophages

Answer: B

16-You inject a mouse with an antigen that it has never been exposed to it before, the injection takes place at week 0, at week 4 you inject the same mouse with the same foreign antigen, choose the right statement:

A) IgM starts to appear after 2-3 days of week 0
B) IgM starts to appear after 2-3 weeks after week 4
C) IgM starts to appear after 2 weeks of week 0
D) IgG appears before IgM
E) IgM aren't produced in week 4

Answer: C

17-Which of the following initiates the classical pathway of the complement system:

A) C1q
B) C1r
C) C1s
D) C3b

Answer: A

18- Which of the following Receptors is not found as membrane bound or endothelial bound receptors in MACROPHAGES:

A) Toll like receptors 3
B) Toll like receptors 4
C) Nod like receptors
D) Scavenger receptors
E) IL-1 receptor

Answer: C

19- Endothelial cells expresse glycoprotein that binds with low affinity to WBCs and helps in their recruitment from blood to tissues:

A) E-Selectin
B) Intracellular adhesion molecule
C) Sialyl lewis X
D) leukocyte function associated antigen 1

Answer: A

20-Large family of molecules that stimulate leukocyte movement and regulate the migration of leukocytes from the blood to tissues and all of which are 8- to 12- kD polypeptides, this definition best describes?

A) Antimicrobial peptide
B) chemokines
C) Complement system

Answer: B

21- CD4 in secondary lymphoid organs that has not been exposed to its antigen yet is called?

A) Naïve immature T helper cell
B) Naïve mature T cytotoxic
C) Naïve Mature T helper cell
D) Activated Mature T helper cell

Answer: C

22- Wrong about antigen interaction with lymphocytes:

A) Soluble antigens recognized by B lymphocytes
B) Soluble antigens on macrophages are recognized by T cells
C) soluble antigens are recognized by T cells

Answer: C

23- Which of the following is a soluble pattern recognition receptor:

A) Carbohydrate receptors
B) RIG like receptors
C) Pentraxin 3
D) Toll like receptor 3

Answer: C

24- Which of the following increases by 1000-fold in inflammation:

A) Albumin
B) C-reactive protein
C) Inflammasome

Answer: B

25- Which of the following is a Pathogen associated molecular pattern:

A) Double stranded Viral RNA
B) LPS
C) HMGb1 (High mobility group box 1)
D) peptidoglycan

Answer: C

26- The best sequence of inflammasome formation is:

A) Inflammasome formation -> cleavage of caspase 1 -> cleavage of Pro IL-1
B) Inflammasome formation-> cleavage of Pro IL-1 -> cleavage of caspase 1
C) Cleavage of Pro IL-1 -> inflammasome formation-> cleavage of caspas1
D) Inflammasome formation -> cleavage of caspase 8 -> cleavage of Pro IL-1

Answer: A

27- Which of the following provides antiviral state to cells:

A) IL-1
B) IL-6
C) IL-8
D) TNF
E) INF-Gamma

Answer: E

28- Which of the following is least important in fighting extracellular pathogen?

A) Macrophage
B) B cells
C) CD8 lymphocyte
D) CD4 lymphocyte

Answer: C

29- A medical student wants to perform a study on MACROPHAGES type 1, the best way to get these cells is by:

A) collect monocytes from the blood and stimulate them with IL-10
B) collect lymphocyte from the blood and stimulate them with IFN and LPS
C) collect monocytes from the blood and stimulate them with IFN and LPS
D) collect hematopoietic cells from bone marrow

Answer: C

30- Which of the following is a transcriptional factor for immune genes?

A) Myd88
B) CD14
C) NF-KB

Answer: C

31- Which of the following is not in LPS recognition pathway?

A) CD14
B) MD2
C) MYD88
D) CD46

Answer: D

32- Which of the following clear Viral infected cells that doesn't exhibit MHC-1?

A) CD8 lymphocyte
B) Dendritic cells
C) Natural killer cells
D) B cells

Answer: C

33- Long statements about Kidney transplant that has been rejected within minutes, choose the wrong statement:

A) this type of rejection is called hyperacute rejection
B) Complement system activation plays a role here
C) antigen presenting cells of the donor plays a role here
D) preformed Antibodies in the recipient attack transplanted organ
E) blood clots are formed which prevents blood supply from reaching the graft

Answer: C

34- Which of the following molecules works as chemokines?

A) IL-1
B) IL-6
C) IL-8
D) CD46
E) TNF

Answer: C

35- All of the following are actions of IL-1 EXCEPT:

A) proliferation of WBCs
B) Migration of WBCs to the site of inflammation
C) inflammatory response
D) Decrease the permeability of the blood vessels

Answer: D

36- Which of the following is wrong regarding Antimicrobial Peptides?

A) work by making pores in the cells
B) Anionic peptides
C) Defincin is an example of antimicrobial peptides
D) part of innate immunity

Answer: B

37- True about GVHD:

A) common after kidney transplant
B) Doesn't occur in identical twins
C) Female Donor to male increases the risk because MHC1 are on Y chromosome
D) CD4 and CD8 of the recipient initiate the disease

Answer: C

38- Neonate immunity is mainly by:

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

Answer: C

39- Which of the following cells is not from a myeloid origin?

A) Macrophage
B) Neutrophil
C) Natural killer
D) Mast cell

Answer: C

40- Histamine releasing cell and contributes in hypersensitivity:

A) Neutrophil
B) CD8 lymphocyte
C) Mast cell
D) Dendritic cell

Answer: C

41- Which of the following doesn't Express MHC II?

A) Neutrophil
B) Endothelial stimulated cell
C) Macrophage
D) B cell
E) Dendritic cell

Answer: A

42- How many binding sites there are between Complementarity Determining Regions (CDR) and an antigen on one Fab?

A) 0
B) 2
C) 3
D) 6

Answer: D

43- Which of the following isn't true about Allograft rejection?

A) Lymphocytes of the recipient recognize DAMPs of the allograft as non self
B) Activate T cells of the recipient by donor non self-antigens
C) Activate T cells of the recipient by donor's self- antigens presented of recipient APC

Answer: A

36- Which of the following has hyper gene recombination for its receptors during maturation

A) Alpha-beta T lymphocytes
B) Gamma-delta T lymphocytes
C) Macrophages
D) Mast cells

Answer: A

37- Which of the following best describes complementary system

A) A group of carbohydrates and lipids that circulate in the blood and a part of immune system
B) A group of proteins for opsonization and inflammatory response
C) Always activated proteins circulate in blood

Answer: B

38- Wrong about MHC molecules

A) Variable between population
B) Variability causes different susceptibility to diseases between population
C) cross presentation presents antigen on MHC II

Answer: C

39- Wrong about Macrophages

A) Phagocytosis of opsonized and non-opsonized Antigens
B) They can activate Naïve T cells
C) Could be found as resident cells in different tissues

Answer: B

40- B and T cells are produced by stem cells that are in:

A) Bone marrow
B) The liver
C) The circulatory system
D) The spleen
E) The lymph nodes

Answer: A

41- Which of the following BEST describes cytokines?

A) Membrane receptors that detect the presence of soluble messengers in the environment
B) Proteins that recruit specific cells to an area
C) Chemical messengers that induce cell differentiation
D) Transcription factors that induce the expression of genes involved in cell adhesion
E) Adhesion molecules that bind to the inside of blood vessels

Answer: B

42- Monocytes move from the systemic circulatory system into general connective tissues, where they differentiate into what phagocytic cell type?

A) Macrophage
B) B Cell
C) T Cell
D) Neutrophil

Answer: A

43- Which immune cell is responsible for the quickest release of histamine that causes the red itchy welts associated with allergies?

A) Mast cell
B) lymphocyte
C) eosinophil
D) basophil

Answer: A

44- Macrophages serve as antigen presenting cells and activate_____:

A) Natural killer cells
B) T lymphocytes
C) B lymphocytes
D) Neutrophils

Answer: B

45- Activation of macrophages is best achieved by which cytokine?

A) Interferon gamma (IFN-γ)
B) Granulocyte monocyte colony-stimulating factor (GM-CSF)
C) Interleukin-1 D. Macrophage chemotactic protein (MCP)
D) Transforming growth factor beta (TGF-β)

Answer: A

46- A 4-year-old child has atopic dermatitis due to severe allergies to dust, animal danger, and many kinds of pollens. Mediators released from which cell type are responsible for the clinical manifestations immediately following exposure to these substances?

A) B cells
B) Macrophages
C) Mast cells
D) TH1 cells
E) TH2 cells

Answer: C

47- A 36-year-old woman with severe allergy to yellow jackets was stung multiple times at a soccer game. Within minutes she developed respiratory distress and became unconscious. Which mediator is primarily responsible for this reaction?

A) Complement
B) IgG
C) Histamine
D) TNF
E) Norepinephrine

Answer: C

48- Which one of the following leukocytes is considered a “granulocyte”?

A) Macrophage
B) Neutrophil
C) Dendritic cell
D) Natural killer cell
E) Natural killer T cell

Answer: B

49- A 45-year-old female presents with anorexia and some abdominal pain. Fecal smears reveal the presence of Taenia eggs, products of a parasitic tapeworm infection. Which one of the following cells would be most effective in defense against this parasite?

A) Platelets
B) Erythrocytes
C) Neutrophils
D) Eosinophils
E) Monocytes

Answer: D

50- The difference between tolerance and immunity depends upon the maturation status of the antigen presenting dendritic cells. What is the T-cell outcome of an antigen presentation event by a mature dendritic cell?

A) Anergy
B) Apoptosis
C) Activation
D) Ignorance
E) Suppression

Answer: C

51- Pattern recognition receptors (PRR) can be found on:

A) B cells
B) T cells
C) Dendritic cells
D) Defensins

Answer: C

52- Depressed levels of MHC class I molecules on virus infected host cells can be detected by:

A) T cytotoxic cells
B) T suppressor cells
C) Activated macrophages
D) NK cells

Answer: D

53- Pathogen-associated molecular patterns:

A) Are found on many microorganisms
B) Are restricted to Gram-positive bacteria
C) Are restricted to Gram-negative bacteria
D) Are restricted to toxin-secreting bacteria

Answer: A

54- Cytokines:

A) Are specific, each with a single activity
B) Can be blocked by extra-cytoplasmic portions of their cellular receptor
C) Release is restricted to lymphocytes
D) Enter cells by a glucose transport system

Answer: B

55-The adaptive immune system develops from stem cells originating in the:

A) Fetal thymus
B) Fetal liver and bone marrow
C) Placenta
D) Germinal centers of the spleen

Answer: B

56- Toll like receptors:

A) Recognize PAMPS on selective microorganisms
B) Link to IgM on B-cell surfaces
C) Link to the antigen receptor on T cells
D) Down-regulate inflammation

Answer: A

57- Which one of the following cells is the source of TNF -a IL-1 , IL-12 ?

A) B cells
B) macrophage
C) mast cells
D) TH1 cells

Answer: B

58- Macrophages recognize microorganisms through the Interaction of their substances with what receptor?

A) antigen receptor
B) complement receptor
C) membrane IG
D) PRR

Answer: D

59- A person developed an extracellular bacterial infection With the subsequent release of IgM, what is the most What is the most important function of IgM in this infection:

A) antigen receptor
B) complement receptor
C) fc receptor
D) membrane Immunoglobulin
E) pattern recognition receptor

Answer: E

60- Activation of the complement system directly causes?

A) enhanced phagocytosis
B) expression of TLR on phagocyte cell surface
C) enhancement of immune mediated neutralization
D) proliferation of T cells

Answer: A

61- In the classical pathway, the antibody activated the C1 complex consisting of C1q, C1r & C1s subunit. Which of the following subunit binds to the antibody:

A) C1q
B) C1r
C) C1s
D) All of the above

Answer: A

62- Which of the following C1 subunit has the catalytic activity that cleaves C4 and C2 complement proteins?

A) C1q
B) C1r
C) C1s
D) None of the above

Answer: C

63-In the classical pathway, which of the following complement complex serve as C3 convertase

A) C4aC2a
B) C4bC2b
C) C4bC2a
D) C4aC2b

Answer: B

64-In the classical pathway, after the proteolysis of C3 complement pathway, which component is cleaved by C4bC2aC3b and initiate the formation of membrane attack complex:

A) C5
B) C6
C) C7
D) C8

Answer: A

65- The deficiency of the complement component factor D and properdin lead to the recurrent bacterial infection. Which of the following pathway is affected in this condition?

A) Alternative pathway
B) Classical pathway
C) Lectin binding pathway
D) None of the above

Answer: A

66- The deficiency of the complement proteins (C1q, C1q, C1s) or the complement receptors lead to the accumulation of immune complexes resulting in SLE or vasculitis. The deficiency affects the following complement pathway:

A) Alternative pathway
B) Classical pathway
C) Lectin binding pathway
D) None of the above

Answer: B

67- The membrane attack complex consists of five different complement proteins C5, C6, C7, C8, and C9. Which of the following subunits bind to the surface and provide a binding site for a subsequent component?

A) C5a
B) C5b
C) Both of the above
D) None of the above

Answer: B

68- The classical and alternative pathways meet at complement component:

A) C3
B) C4
C) C4b
D) C5
E) Factor D

Answer: A

69) A T cell located at the epithelial barrier of the gut is a:

A) (γδ) T cell
B) Helper T cell
C) Cytotoxic T cell
D) Regulatory T cell
E) Natural killer T cell

Answer: A

70- A cell found in the circulation that secretes INFα and INFβ is a :

A) Neutrophil
B) Basophil
C) Eosinophil
D) Plasmacytoid cell
E) Mast cell

Answer: D

71- An anti-inflammatory cytokine is:

A) INF-γ
B) IL-4
C) IL-6
D) IL-10
E) IL-17

Answer: D

72- Which one of the following is NOT a primary function of phagocytes?

A) Engulfing and killing invading microbes
B) Expression of proinflammatory cytokines and chemokines
C) Attacking cells with perforins and granzymes
D) Production of free oxidative radicals
E) Presentation of antigen peptides in complex with MHC to T cells

Answer: C

73- Regarding chemokines, which one of the following is the most accurate?

A) Chemokines penetrate the membranes of target cells during attack by cytotoxic T cells.
B) Chemokines bind to the T-cell receptor outside of the antigen-binding site and activate many T cells
C) Chemokines attract neutrophils to the site of bacterial infection, thereby playing a role in the inflammatory response.
D) Chemokines induce gene switching in B cells, which increases the amount of IgE synthesized, thereby predisposing to allergies.

Answer: C

74- A workup on an ill child revealed low levels of complement C3 in her blood. Which one of the following presentations did this child most likely manifest?

A) Chronic eczema
B) Immune hemolytic anemia
C) Incomplete recovery from viral infections
D) Poor response to vaccination
E) Recurrent infections with extracellular bacteria

Answer: E

75- The interaction of which molecule on the membrane of cells with its ligand signals apoptosis?

A) B7 (CD80/86)
B) CD40
C) CTLA-4 (CD152)
D) Fas (CD95)
E) Fc receptor (CD16)

Answer: D

76- Which one of the following cytokines plays the most important role in protection against intracellular growth (reactivation) of Mycobacterium tuberculosis? *

A) Interferon-γ
B) Interleukin-2
C) Interleukin-5
D) Interleukin-10
E) Tumor necrosis factor

Answer: A

77- Neutrophils are attracted to the sites of extracellular bacterial infections by which two important chemotactic substances?

A) Bacterial mannose and lipopolysaccharide
B) Complement C5a and interleukin-8 (CXCL-8)
C) Histamine and complement C3b
D) Interleukin-7 and interleukin-16
E) Leukotriene B4 and granulocyte colony stimulating factor (G-CSF)

Answer: B

78- A 66-year-old man with advanced pancreatic cancer develops cachexia (loss of mass) Which cytokine is primarily responsible for the cachexia seen in certain patients with cancer or debilitating infections?

A) Interferon-α
B) Interleukin-7
C) Interleukin-17
D) Transforming growth factor-β
E) Tumor necrosis factor

Answer: E

79- A person develops a viral infection and both T and B cells become activated to fight the infection. In which way is antigen recognition by B cells different from antigen recognition by T cells?

A) B cells home to the paracortex of lymph nodes where they recognize the antigens trapped by helper T cells
B) B cells recognize the antigens that have been processed and presented by follicular dendritic cells
C) B cells undergo receptor editing to change receptors that fail to bind to an antigen
D) B cells utilize membrane immunoglobulin molecules to bind to antigen in its natural state
E) The antigen receptors on a single B cell have a broad specificity, and are able to recognize several chemically unrelated antigens

Answer: D

80-The person in the above question is experiencing a primary infection with the virus. B cells activated in a primary infection secrete which class of antibody first?

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

Answer: E

81-The viral infection in the above question began in the respiratory tract. Which antibody class would best protect respiratory epithelial cells from viral infection?

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

Answer: A

82-The virus in the above question spreads from the respiratory tract and causes viremia. Which antibody class would be most important in fighting the virus as it spreads through the body?

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

Answer: D

83- Antigen receptors on T and B cells share which similar feature?

A) Affinity maturation occurs following antigen recognition for both receptor types
B) Interaction with MHC molecules is required for antigen recognition by both receptor types
C) The constant regions of both receptor types are identical
D) The specificity of both receptor types is determined following exposure of mature cells to antigen
E) The variable portions of both receptor types are generated by random recombination of genes

Answer: E

84- Which of the following best describes a Hapten?

A) Large in size and can induce an immune response alone
B) Large in size and needs to be coupled to induce an immune response
C) Small in size and can induce an immune response alone
D) Small in size and needs to be couple to induce an immune response
E) None of the above

Answer: D

85- 19-year-old college student develops a rash. She works part-time in a pediatric AIDS clinic. Her blood is drawn and tested for specific antibody to the chicken pox virus (varicella-zoster). Which of the following antibody classes would you expect to find if she is immune to chicken pox?

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

Answer: A

86-The complement system plays a key role in the host defense process. Which of the following components of this system is the most important in chemotaxis?

A) C3a
B) C3b
C) C4a
D) C5a

Answer: E

87- The T-cell antigenic receptor:

A) Is a monomeric IgM molecule
B) Is a monomeric IgG molecule
C) Will respond only to epitopes processed class I HLA molecules
D) Does not interact directly with circulating antigens

Answer: D

88- A cell expressing CD3, CD25, is a:

A) (γδ) T cell
B) Helper T cell
C) Cytotoxic T cell
D) Regulatory T cell
E) Natural killer cell

Answer: D

89- A CD3(+) cell that secretes perforin and granzyme is a:

A) (γδ) T cell
B) Helper T cell
C) Cytotoxic T cell
D) Regulatory T cell
E) Natural killer cell

Answer: C

90- Antibodies in our body are produced by:

A) B-lymphocytes
B) T-lymphocytes
C) Monocytes
D) RBC's

ANSWER: A

91- Plasma cells are the end cells of

A) T-cells
B) β-cells
C) Killer cells
D) NL

Answer: B

92- Dendritic cells, macrophages, and what other cell types are considered "professional antigen presenting cells," capable of antigen presentation to T helper cells?

A) B cells
B) Basophils
C) Eosinophils
D) Mast cells
E) Neutrophils

Answer: A

93- If a person had a genetic defect affecting perforin production, which cells and immune function would be affected?

A) Cytotoxic T cells and natural killer cells/cell killing
B) Dendritic cells/antigen presentation
C) Eosinophils and basophils/granule production
D) Macrophages and neutrophils/phagocytosis

Answer: A

94- Antigen receptors on T and B cells share which similar feature?

A) Affinity maturation occurs following antigen recognition for both receptor types
B) Interaction with MHC molecules is required for antigen recognition by both receptor types
C) The constant regions of both receptor types are identical
D) The specific city of both receptor types is determined following exposure of mature cells to antigen
E) The variable portions of both receptor types are generated by random recombination of genes

Answer: E

95- Which immune system cells recognize body cells with reduced expression of MHC class I molecules?

A) Cytotoxic T cells
B) Dendritic cells
C) Macrophages
D) Natural killer cells
E) Neutrophils

Answer: D

96- Antigen presenting cells (APCs) are required for T-cell recognition of specific antigen and activation. APCs accomplish this task by presenting antigen in the context of which of the following molecules?

A) T-cell receptor (TCR)
B) Toll-like receptor (TLR)
C) Major histocompatibility complex (MHC)
D) FCR

Answer: C

97- The difference between tolerance and immunity depends upon the maturation status of the antigen presenting dendritic cells. What is the T-cell outcome of an antigen presentation event by a mature dendritic cell?

A) Anergy
B) Apoptosis
C) Activation
D) Ignorance
E) Suppression

Answer: C

98- Which of the following describes the hematopoietic centers in Gestation?

A) blood island -> liver -> bone marrow
B) bone marrow -> blood islands -> liver -> bone marrow
C) liver -> blood islands -> bone marrow

Answer: A

99- Which of the following peripheral immune tissues is likely to be different from teen through life to old age?

A) spleen
B) MALTs
C) thymus
D) lymph nodes

Answer: C

100- Which of the following molecules triggers the caspase cascade and through which cells?

A) perforins/granzymes through CD8 cells
B) isozymes through CD4 cells
C) isozymes through CD8 cells
D) perforins/granzymes through CD4 cells

Answer: A

101- Which of the following regulators inhibits TCC convertase?

A) CD14

B) CD59

D) CD46

Answer: B

102- A medical student wants to perform a study on MACROPHAGES type 1, the best way to get these cells is by:

A) collect monocytes from the blood and stimulate them with IL-10

B) collect lymphocyte from the blood and stimulate them with IFN and LPS

C) collect monocytes from the blood and stimulate them with IFN and LPS

D) collect hematopoietic cells from bone marrow

Answer: C

103- neonate immunity is mainly by:

A) IgM

B) IgA

C) IgG

D) IgE

E) IgD

Answer: C

104- which of the following cells is not from a myeloid origin?

A) Macrophage

B) Neutrophil

C) Natural killer

D) Mast cell

Answer: C

105- Which of the following doesn't Express MHC II?

A) Neutrophil

B) Endothelial stimulated cell

C) Macrophage

D) B cell

E) Dendritic cell

Answer: A

106- Which of the following best describes complementary system?

A) A group of carbohydrates and lipids that circulate in the blood and a part of immune system

B) A group of proteins for opsonization and inflammatory response

C) Always activated proteins circulate in blood

Answer: B

107- Macrophages can be described by one of the following?

A) Has a life span of several hours.

B) Important players of adaptive immunity.

C) Can phagocytose opsonized pathogens only.

D) Can present antigens on MHC II.

E) Expresses T-cell receptors and B-cell receptors.

Answer: D

108- An example of a damage associated molecular pattern (DAMP) is:

A) Heat shock proteins

C) Lipopolysaccharide

D) dsRNA

Answer: A

109- Which of the following is a characteristic of adaptive immunity in living organisms?

A) Activated immediately upon first antigen encounter.

B) Important for eradicating intracellular infections.

C) Recognizes only a small number of conserved molecular patterns associated with pathogens.

D) Deficiencies in adaptive immunity usually results in no symptoms.

E) An ancient immune system that can be found in plants and unicellular organisms.

Answer: B

110- The precursor cell to an activated macrophage present at the site of inflammation is:

A) Monocyte

B) Neutrophil

C) Follicular dendritic cell

D) Mast cell

E) Naive T-cell

Answer: A

111- The relationship between innate and adaptive immunity can be described by one of the following:

A) Innate immunity can recognize foreign antigens while adaptive immunity cannot.

B) Adaptive immunity has evolved before innate immunity in all life forms.

C) Innate immune responses are activated following the recognition of antigens by adaptive immunity

D) Adaptive immune responses are activated several days after innate immunity.

E) Adaptive immunity can recognize foreign antigens while innate immunity cannot.

Answer: D

112- Which of the following characteristics regarding neutrophils is correct?

A) Half-life of a few weeks in circulation.

B) Originates from the myeloid lineage in the bone marrow.

C) Contains mainly basophilic granules in the cytoplasm.

D) Main function is in tissue regeneration.

E) Mainly found as tissue resident cells.

Answer: B

113- Natural antibodies found in circulation are mainly secreted by which of the following cells?

A) Plasmacytoid dendritic cell

B) Follicular B-cells

C) CD4+ T-cells

D) B-cells

E) Macrophages

Answer: D

114- The recognition of a pathogen-associated molecular patterns (PAMP) can be done with one of the following:

A) Mannan

B) Peptidoglycan

C) NF-kappa B

D) IL-1

E) Collectins

Answer: E

115- How many complementarity determining regions (CDR) in one Fc portion of an antibody?

A) 0

B) 6

C) 4

D) 3

Answer: A

116- One of the following immune cells are found mainly in circulation and migrate to tissue immediately upon sensing

danger:

A) Mast cell

B) Naive B-cell

C) Macrophage

D) Conventional dendritic cell

E) Neutrophil

Answer: E

117- The cell type that can best activate naive CD4+ T-cell is:

A) Macrophage

B) B lymphocyte

C) Conventional dendritic cell

D) Plasmacytoid dendritic cell

E) CD4+ T-cell

Answer: C

118- One of the following is expected to increase phagocytosis of bacteria?

A) Production of antibody proteases.

B) Binding of immunoglobulin Fc portion by bacterial proteins.

C) Bacterial biofilm formation

D) Deposition of C3b on the bacterial surface.

Answer: D

119- The complement protein that initiates the lectin pathway is:

A) C1s

B) C3b

C) MBL

D) C2b

E) C1q

Answer: C

120- Which of the following cell types is expected to participate last in the immune response during first exposure to a

viral pathogen?

A) γδT cells

B) Neutrophils

C) Naïve CD8+ T cells

D) Natural killer cells

E) Macrophages

Answer: C

121- Toll like receptors are:

A) Proteins that cause pore formation in the surface of the pathogen

B) Proteins involved in pathogen recognition and activation of innate immune responses

C) Proteins that relay anti-inflammatory signals

D) Mostly found in circulation.

E) Present only in humans.

Answer: B

122- Include mucosa-associated lymphoid tissue (MALT), lymph nodes, and spleen:

A) secondary (peripheral) lymphoid organs and tissues
B) testing methods for antibodies
C) 3 types of immune response
D) granulocytes

Answer: A

123- Accumulate at inflammatory sites and release histamines, which cause allergic responses; activated by IgE antibody:

A) basophils
B) cytokines
C) neutrophils
D) eosinophils

Answer:A

124- Highly specific antibodies that react ONLY with the antigen that caused their production

A) heterophile antibodies
B) cellular component
C) monoclonal antibodies
D) natural killer cells

Answer: C

125- Eenzyme secreted by macrophages that attack cell walls of some bacteria

A) Eosinophils
B) Lysozymes
C) Basophils
D) Mast cells

Answer: B

126- Exclusively on B cells cluster differentiation:

A) CD19
B) CD25
C) Notch1

Answer: A

127- Defense against parasites (allergic diseases):

A) RAG
B) DN1
C) Recognized ligand
D) IgE

Answer: D

128- Single chain with 4 Ig-like domains:

A) MHC class II
B) CD8
C) CD4
D) IgG
E) DNA

Answer: C

BACTERIOLOGY:

1- The inactivation of all self-propagating biological entities associated with the materials, is called:

A) Disinfection
B) Cleaning
C) Sterilization
D) Decontamination

Answer: C

2- Which structure that can be found in prokaryotes but not human cells:

A) PG
B) Plasma membrane
C) Ribosomes
D) Cell wall
E) LPS

Answer: D

3- The structure that determines the decolorization difference between gram negative and gram positive bacteria is:

A) Plasma membrane
B) LPS
C) Peptidoglycan layer
D) Plasma membrane

Answer: C

4- In *Escherichia coli*, Escherichia is:

A) Species
B) Family
C) Genus
D) Class

Answer: C

5- The ascending order according to their ability to resist sterilization:

A) Bacteria, spores, Enveloped Viruses
B) Spores, bacteria, Enveloped viruses
C) Enveloped viruses, bacteria, spores

Answer: C

6- Which of the following is true:

A) lag phase has the highest acceleration
B) the doubling time is the same for the same bacterial species at the same conditions
C) Stationary phase, there is an equilibrium between cell division and death

Answer: C

7- Which one of the following is not a slow growing bacterium?

A) Mycobacterium marinum
B) Mycobacterium fortuitum
C) Mycobacterium scrofulaceum
D) Mycobacterium ulcerans

Answer: B

8- The size range of bacteria:

Answer: 0.1-10 micrometer

9- Which of the following is used for bacterial attachment:

Answer: Fimbria

10- The sex pilus is used for:

Answer: Conjugation

11- The correct statement about endotoxins:

Answer: Only found in gram negative bacteria

1- One of the following characteristics IS TRUE about Protozoa and helminths:

A) Contain either DNA or RNA
B) Mitochondria is absent
C) The method of replication is Mitosis
D) The sedimentation coefficient of ribosomes is 70s
E) Have rigid wall containing chitin

Answer: C

2- Penicillin is a widely used antibiotic which targets beta-lactam ring in the outer layer of bacteria. It was discovered by:

A) Kary Mullis
B) Alexander Fleming
C) Robert Koch
D) Louis Pasteur

Answer: B

3- One of the following Bacteria is an obligate intracellular:

A) Clostridium
B) Mycoplasma
C) Bacillus
E) Chlamydia

Answer: D

4- Lophotrichous means:

A) Flagella at both poles
B) Flagella all around the cell
C) Tuft of flagella on one poles
D) Tuft of flagella at both poles
E) Flagella at one pole

Answer: C

5- In most bacteria, the capsule consists mainly of:

A) Polysaccharides
B) Proteins
C) Lipids
D) Metals

Answer: A

6- Inhibiting synthesis of one of the following can significantly affect bacterial adhesion to epithelial cells:

A) Flagellum
B) Capsule
C) Fimbria
D) Type 1 secretions system
E) Cytolysins

Answer: C

7- When nutrients in the culture media are depleted and toxic materials accumulated and death in the bacteria is more than replication, this will lead to?

A) Stationery phase
B) log phase
C) Lag phase
D) Decline phase
E) Exponential phase

Answer: D

8- Nystatin is added in Thayer Martin medium in order to kill?

A) Neisseria gonorrhoeae
B) Most gram-negative organisms
C) Most fungi
D) Swarming Proteus

Answer: C

9- The correct order of bacterial growth stages is:

A) a-Lag phase > Log phase > death phase > stationary phase
B) b-Lag phase > Log phase > stationary phase > death phase
C) c-Log phase > Lag phase > death phase > decline phase
D) d-Lag phase > stationary phase > death phase > exponential phase

Answer: B

10- Which of the following is a selective media?

A) Thayer martin medium
B) blood agar
C) chocolate agar
D) d-Robertson's cooked meat medium

Answer: A

11- What is the name of enzyme that Trimethoprim inhibits to prevent the bacteria synthesis folic acid?

A) Methylenetetrahydrofolate dehydrogenase
B) Dihydrofolate reductase
C) Folylpoly-gamma-glutamate synthetase
D) Gamma-glutamyl hydrolase
E) Serine hydroxy methyltransferase

Answer: B

12- An example of obligate anaerobes?

A) Campylobacter species
B) Helicobacter species
C) Pseudomonas aeruginosa
D) Bacteroides fragilis

Answer: D

13- Lithotroph bacteria:

A) can use light energy
B) can draw carbon from carbon dioxide
C) can use inorganic sources for obtaining hydrogen
D) must obtain energy from oxidation-reduction of external chemical compounds

Answer: C

14- The enzyme catalase is only found in

A) aerobic bacteria
B) anaerobic bacteria
C) all bacteria
D) facultative anaerobic bacteria
E) more than one of the above

Answer: E

15- Neisseria is found in a specimen with 2 other lactose fermenters What are your steps to distinguish it?

A) using a thayer martin medium
B) using macconkey medium
C) using CLED medium
D) more than one of the above
E) all the above

Answer: D

16- The role of vancomycin in Thayer martin medium is:

A) killing gram positives
B) killing gram negatives
C) inhibiting protozoa
D) its not found it Thayer martin medium

Answer: A

17- Which of the following grows on nutrients agar?

A) chlamydia
B) Treponema pallidum
C) Mycobacterium leprae
D) staphylococcus aureus

Answer: D

18- the vibrio bacterium appears yellow on ..... due to .....

A) TCBS medium / sucrose fermentation
B) CLED / lactose fermentation
C) XLD / sucrose fermentation
D) MacConkey / lactose fermentation

Answer: A

19- Stuart's medium is used for:

A) transport
B) anaerobic bacterium
C) isolation of certain bacteria
D) none of the above

Answer: A

20- The period in which bacteria are preparing for rapid proliferation by high metabolic activity is?

A) the growth phase
B) lag phase
C) stationary phase
D) none of the above

Answer: B

21- After a messy night at the lab, you and your supervisor go home without cleaning up only to return the next morning to find a left over patry dish at the counter with a beta hemolytic obvious activity in it , which of the following bacterium do you expect did this and on what medium

A) hemophilius influenza .... chocolate agar
B) staph aureus .... blood agar
C) shigella bacterium ... XLD medium
D) vibrion bacterium ... TCBS medium Which of the following grows on nutrients agar

Answer: B

22- Staphylococcus saprophyticus is known to cause UTIs (urinary tract infection) after pulling a sample ..which of the following medium do you use to grow

A) Thayer martin
B) CLED
C) MacConkey's
D) enriched glycol serum

Answer: B

23- The last phase of bacterial growyh cycle is:

A) lag phase
B) stationary phase
C) death
D) exponential

Answer: C

24- Coagulase test differentiates bewtween:

A) Staphylococci from streptococci
B) Streptococci from enterococci
C) Staph aureus from staph epidermis
D) Staph epidermidis from staph saprophyticus

Answer: C

25- Most strains of Staphylococcus aureus indicate:

A) phosphatase production
B) a golden-yellow pigment
C) B-haemolysis on sheep blood agar
D) all of the above

Answer: D

26- Bacteria which produces coagulase is:

A) S epidermidis
B) S saprophyticus
C) S aureus
D) S hominis

Answer: C

27- Identify the bacteria which is coagulase-positive and catalase-positive:

A) Staphylococcus aureus
B) Streptococcus
C) Neisseria
D) Pseudomonas

Answer: A

28- All of the given are the distinguishing characteristics of Mycobacterium leprae, EXCEPT:

A) It is an acid-fast bacillus
B) It cannot be isolated in-vitro culture method
C) It is a human and as well as animal pathogen
D) It can be isolated by only in-vivo culture method

Answer: C

29- Humans become infected with Mycobacterium tuberculosis most frequently by:

A) inhalation
B) ingestion
C) contact
D) inoculation

Answer: A

30- The initial therapy of tuberculosis treatment regimen includes which of the following antibiotics drugs?

A) Streptomycin and rifampin
B) Isoniazid, streptomycin, and ethambutol
C) Rifampin, isoniazid, and ciprofloxacin
D) Isoniazid, rifampin, pyrazinamide, and ethambutol

Answer: D

31- What is the interferon-gamma release assay?

A) The antigen detection test for the Mycobacterium spp
B) The DNA detection test in Mycobacterium spp
C) The test used as an alternative tuberculin skin test in latent tuberculosis
D) The test used as an alternative tuberculin skin test in the active tuberculosis

Answer: A

32- All of the following are the symptoms of pulmonary tuberculosis, EXCEPT?

A) Veakness and fatigue
B) Decreased body temperature
C) Weight loss
D) Severe prolonged cough with sputum or blood

Answer: B

33- Which of the following bacteria causes lung infection and is the most common non-tuberculous mycobacterial infection associated with AIDS patients?

A) Mycobacterium avium complex
B) Mycobacterium leprae
C) Mycobacterium gordonae
D) Mycobacterium gastri

Answer: A

34- The functions of plasmid are:

A) DNA replication
B) Protein synthesis
C) Cell wall synthesis
D) None of the above

Answer: A

35- Endotoxin produced by gram negative bacteria is present in:

A) Peptidoglycan
B) Lippolysacharide
C) Theichoic acid
D) Inner membrane

Answer: B

36- Staining material of gram positive bacterium is

A) Fast green
B) Haematoxylon
C) Crystal violet
D) Safranin

Answer: C

37- Bacterial ribosomes are composed of

A) Protein and DNA
B) Protein and mRNA
C) Protein and rRNA
D) Protein and tRNA

Answer: C

38- A bacterium containing prophage is called as

A) Lytic
B) Lysogen
C) Lytogen
D) None of these

Answer: B

39- Bacteriophage capable of only lytic growth is called:

A) Temperate
B) Avirulent
C) Virulent
D) None of these

Answer: A

40- Cytochromes are:

A) Oxygen acceptors
B) ATP acceptors
C) Electron acceptors
D) Protein acceptors

Answer: C

41- Recombination process occurring through the mediation of phages is:

A) Conjunction
B) Transduction
C) Transformation
D) Transfection

Answer: B

42- Enterotoxin responsible for food poisoning is secreted by:

A) Enterococci
B) Entamoeba histolytica
C) Enterobacteriaceae
D) Straphylococci

Answer: D

43- Autolysis is done by:

A) Mitochondria
B) Lysosomes
C) Golgi bodies
D) Peroxisomes

Answer: B

44- A facultative anaerobic is:

A) Only grow anaerobically
B) Only grow in the presence of O2
C) Ordinarily an anaerobe but can grow with O2
D) Ordinarily an aerobe but can grow in absence of O2

Answer: D

45- Cell wall of gram negative bacteria is:

A) Thick
B) Lipids are present
C) Teichoic acids are absent
D) None of these

Answer: C

46- The bacterial cell multiplication is usually by:

A) Mitosis
B) Meiosis
C) Conjugation
D) Binary-fission

Answer: D

47- Rod shaped bacteria are known as

A) Cocci
B) Comma forms
C) Bacilli
D) Plemorphic froms

Answer: C

48- Teichoic acids and Teichuronic acids are found in

A) Gram positive bacteria
B) Gram negative bacteria
C) Fungi
D) None of these

Answer: A

49- Bacterial capsule is chemically composed of

A) Polypeptide
B) Polynucleotides
C) Polysaccharides
D) Polypeptides or polysaccharides

Answer: D

50- The characteristic shape of the bacteria is maintained because of

A) Capsule
B) Cell wall
C) Cell membrane
D) Slime layer

Answer: B

51- The differences between Gram positive and Gram negative bacteria is shown to reside in the

A) Cell wall
B) Nucleus
C) Cell membrane
D) Mesosomes

Answer: A

52- Bacterial locomotion is accomplished by

A) Fimbria
B) Flagella
C) Cytoskeleton
D) Both a and b

Answer: D

53- Cell-wall is

A) Thick in Gram positive than Gram negative
B) Thick in Gram negative than Gram positive
C) Equal in both
D) In Gram negative cell-wall is absent

Answer: A

54- The microorganism engulfed by phagocyte resides in a vacuole is known as

A) Phagosome
B) Lysosome
C) both a and b
D) None of these

Answer: A

55- Presence of viable bacteria in the blood stream is called

A) Viraemia
B) Septicaemia
C) Bacteraemia
D) Bactericidal

Answer: C

56- β-haemolytic bacteria is

A) Streptococcus pyogenes
B) Str. pneumoniae
C) Str. Faecalis

Answer: A

57- Streptococcus pyogenes classification is based on

A) Protein M
B) Protein T
C) Protein R
D) Polysaccharide C

Answer: A

58- α-haemolytic streptococci are also known as

A) Str. Pyogenes
B) Virulence group
C) Viridans group
D) None of these

Answer: C

59- Diagnosis of bacterial disease can be made by

A) Finding bacteria in pathological fluids
B) Isolation of bacteria by culture from exudates or blood
C) Both a and b
D) None of these

Answer: C

60- Staphylococcus aureus are characterized by

A) Formation of acid in sucrose, dextrose
B) Liquification of gelatin due to production of gelatinase
C) Strains are catalase positive
D) All of above
E) None of these

Answer: C

61- Teichoic acid is:

A) Found in the walls of Gram positive bacteria
B) Provide receptors for phages
C) Make up outer wall of Gram negative bacteria
D) Influence the permeability of the membrane

Answer:

62- One flagelium at one end of the organ is called –

A) Monotrichate
B) Amphitrichate
C) Iophotrichate
D) Peritrichate

Answer: A

63- What is the function of bacterial capsule?

A) Production of organism from phagocytosis
B) Helps in adherence of bacteria to surface in its environment
C) Both a and b
D) None of these

Answer: C

63- The main feature of prokaryotic organism is

A) Absence of locomotion
B) Absence of nuclear envelope
C) Absence of nuclear material
D) Absence of protein synthesis

Answer: B

64- A mutation causing a substitution of one amino acid is called

A) Point mutation
B) Silent mutation
C) Missence mutation
D) None of these

Answer: C

65- A disease that can be transmitted by an infectious agent from one individual to another was called:

A) Epidemic
B) Pandemic
C) Communicable

Answer: C

66- Genetic constitution of the cell is

A) Phenotype
B) Genotype
C) Cryptotype
D) Histotype

Answer: B

67- Streptokinase is produced by

A) Staphylococcus aureus
B) Streptococcus pneumoniae
C) Str. faecalis
D) Str. Pyogenes

Answer: D

68- β-lactum ring is present in

A) Erythromycin
B) Penicillin
C) Tetracyclins
D) Chromphenical

Answer: B

69- E.coli produce which type of toxins?

A) Exotoxins
B) Endotoxins
C) Leucocidin
D) Both A And B

Answer: D

70- Causative organism of whooping cough is

A) Bordetella pertussis
B) Bordetella parapertussis
C) Bordetella bronchi septica
D) None of these

Answer: A

71- The first phase of a growth curve is

A) Log phase
B) Lag phase
C) γ phase
D) Both a and b

Answer: B

72- Rapid bacterial growth phase is known as

A) Log
B) Lag
C) None of these

Answer: A

73- Cells are acive and synthesizing new protoplasm. This stage of growth is called

A) Lag phase
B) Stationary phase
C) Log phase
D) All of these

Answer: C

74- Bacteria which need oxygen for growth are called

A) Thermophilic bacteria
B) Microaerophilic bacteria
C) Facultative anaerobic bacteria
D) Mycobacteria

Answer: B

75- pH required for the growth of bacteria is

A) 6.8 – 7.2
B) 5.6 – 8.2
C) 3.0 – 6.0
D) 8.0 – 14.0

Answer: A

76- Drug resistance in bacteria is mainly determined by factor:

A) F
B) R
C) Col
D) Lysogenic factor

Answer: D

77- The bacteria which are able to grow at 0°C but which grow at 20°C to 30°C, are known as

A) Psychrophiles
B) Facultative psychrophiles
C) Average psychrophiles
D) Mesophile

Answer: C

78- Minimum growth temperature is

A) The growth of organisms at lowest temperature
B) The lowest temperature at which the microorganisms grow
C) The maximum temperature at which the growth is stable
D) None of these

Answer: B

79- Optimum growth temperature is greater that 45oC is

A) Mesophiles
B) Thermophiles
C) Psychrophiles
D) None of these

Answer: A

80- The organisms which can grow both in presence and absence of oxygen

A) Aerobes
B) Anaerobes
C) Faculative anaerobes
D) Strict aerobes

Answer: C

81- The organisms which can grow best in the presence of a low concentration of oxygen

A) Aerophilic
B) Microaerophilic
C) Aerobic
D) Anaerobic

Answer: B

82- The most active stage in the sigmoid curve of bacteria in which maximum growth is attained

A) Lag phase
B) Stationary phase
C) Decline phase
D) Log phase

Answer: D

83- Growth curve does not include following phases of bacteria –

A) Decline phase
B) Stationary phase
C) Lag phase
D) Synchronous growth

Answer: D

84- Bacteria are more sensitive to antibiotics at which phase of growth curve?

A) Decline phase
B) Stationary phase
C) Lag phase
D) Log phase

Answer: D

85- The generation time is

A) The time required for the cell to divide
B) The total division of the cell during its life time
C) The total no. of cells formed d. None of these

Answer: A

86- The reproduction rate is equal to death rate in which stage:

A) Decline phase
B) Stationary phase
C) Lag phase
D) Log phase

Answer: B

87- Log-phase is also known as

A) Death phase
B) Exponential phase
C) Lag-phase

Answer: B