Instructions:

(1) Fill up strictly the details of the examination on your answer book.

Name of the Examination: B. Sc. (Biotechnology) (Sem. III)

Name of the Subject: BT-07: Fundamentals of Immunology (Core-I Course-III)

(2) This exam contains 50 multiple choice questions, each worth 1 mark.
(3) Choose only ONE most appropriate answer per question.
(4) Do not crease or fold the answer sheet.

OMR Sheet तस्वीर अंगैं अंगैं अंगैं सुगन्ध तस्वीर तस्वीर.
OMR Sheet-ली पाचौ अंग छ।

Important instructions to fillup OMR Sheet is given on back side of the provided OMR Sheet.
1. A person with anti-A and anti-B antibodies in their blood has what blood type?
   (A) type O
   (B) type B
   (C) type AB
   (D) type A

2. The full form of abbreviation PRRs is:
   (A) Pathogen recognition receptors
   (B) Pattern recognition receptors
   (C) Pathogen recovered receptor
   (D) Pathogen reactive receptors

3. The majority of the thymocyte population is present in which part of thymus?
   (A) Medulla
   (B) Paracortex
   (C) Germinal centers
   (D) Cortex

4. Keratin is produced by which cells in skin?
   (A) Keratinocytes
   (B) Keratinocytes
   (C) Sebum cells
   (D) Epidermal cells

5. GALT is present in
   (A) Tonsils, nose and throat only
   (B) Tonsils, mouth and throat only
   (C) Tonsils, intestine and throat only
   (D) Tonsils, adenoids and Peyers’s patches
6 The pH of skin is:
   (A) Mild basic (8-9)
   (B) Mild acidic (5-6)
   (C) Mild acidic (6-7)
   (D) Mild acidic (3-4)

7 Lysozyme
   (A) Breaks down carbohydrates
   (B) Breaks down peptidoglycan
   (C) Breaks down cell membrane
   (D) Breaks down proteins

8 Which one of these can be an efficient opsonin?
   (A) Complement alone
   (B) Antibody and complement
   (C) Antibody and non specific receptors
   (D) Antibody alone

9 Which one of these is not cationic peptide?
   (A) Defension
   (B) Cathelicidin
   (C) Lysin
   (D) Histatin

10 Precursors of macrophages are called
   (A) Plasma cells
   (B) Monocytes
   (C) B cells
   (D) T cells
11 MHC genes in mouse is located in
   (A) Chromosome 2
   (B) Chromosome 4
   (C) Chromosome 6
   (D) Chromosome 17

12 Which of the following is an autoimmune disease?
   (A) Multiple sclerosis
   (B) Cancer
   (C) Asthma
   (D) AIDS

13 Which antibody characterizes the allergic reaction?
   (A) IgA
   (B) IgM
   (C) IgE
   (D) IgG

14 Histamine is secreted by
   (A) Mast cells
   (B) Red blood cells
   (C) White blood cells
   (D) Epithelial cell

15 Which of the following causes AIDS?
   (A) Fungus
   (B) Retrovirus
   (C) TMV
   (D) Bacteria

16 Thymus growth occurs up to
   (A) 12 years
   (B) 5 years
   (C) 30 years
   (D) 17 years

17 Which of the following secretes immunoglobulin?
   (A) B-lymphocyte
   (B) Macrophage
   (C) Mast cells
   (D) T-lymphocyte
18 The H-chain of immunoglobulin has a molecular weight
(A) Twice that of light chain
(B) Triple the amount of light chain
(C) Twice as that of dark chain
(D) Equivalent to that of light chain

19 Immunoglobulins are chemically
(A) Glyco-proteins
(B) Glycolipids
(C) Lipo-proteins
(D) Glycogens

20 Hyper variability regions are present in
(A) light chain only
(B) heavy and light
(C) dark chain
(D) heavy chain only

21 Organ transplantation from pig to human is an example for
(A) Allo-graft
(B) ISO-graft
(C) Xeno-graft
(D) Autograft

22 Which organ upon activation produces the Acute phase proteins ?
(A) Kidney
(B) Bone marrow
(C) Spleen
(D) Liver

23 All of the following are true with respect to IgM antibodies EXCEPT which one
(A) they predominate in the primary response to antigen
(B) they are glycoproteins
(C) they mediate allergic reaction
(D) it is usually a pentamer

24 One principal function of complement is to
(A) mediate the release of histamine
(B) bind antibodies attached to cell surfaces and to lyse these cells
(C) phagocytize antigens
(D) inactivate perforins
25 One principal function of the Class I and Class II major histocompatibility complex proteins is to
(A) mediate immunoglobulin class switching
(B) present antigen for recognition by the T-cell antigen receptor
(C) stimulate production of interleukins
(D) transduce the signal to the T-cell interior following antigen binding

26 When a B cell encounters antigen to which it is targeted, it divides rapidly and produces
(A) T cells
(B) Killer cells
(C) More antigen
(D) Plasma cells

27 Secondary antibody responses are better because:
(A) They are stronger and faster
(B) They provide defense against unrelated antigens
(C) The antibody can be made by both T and B cells
(D) They do not require T-cell help

28 Complement and antibody are similar in that both:
(A) are produced by mast cells
(B) have two identical antigen-binding sites
(C) are activated in an inflammatory cascade
(D) may make bacteria more attractive to phagocytes

29 All of the following are true of antigen EXCEPT which one of the following?
(A) They will react with antibodies
(B) They contain paratopes
(C) They can elicit an immune response
(D) They contain epitopes

30 All of the following are true with respect to IgE molecules, EXCEPT which one?
(A) They are the least abundant immunoglobulin in the serum
(B) They will cross the placenta and fix complement
(C) They can affect the release of histamine and other chemical mediators
(D) They are the principal immunoglobulin class involved in allergic reactions
31 Which of the following immunoglobulin is present normally in plasma at the highest concentration?
(A) IgM  (B) IgA  
(C) IgD  (D) IgG  

32 All of the following are true about antibodies, EXCEPT which one?
(A) They occur on the surface of B-lymphocyte
(B) They predominate the primary immune response to antigen
(C) They are glycoproteins
(D) They are molecule with a single, defined amino acid sequence

33 The antibodies that are able to cross placenta are:
(A) IgG and IgM
(B) IgD
(C) IgE
(D) IgG

34 The immunoglobulin Joining chain (J-chain) is
(A) Only produced by neutrophils
(B) associated with only multimeric forms of IgM and IgA
(C) associated with IgE for histamine release
(D) only produced by T-Cells

35 All of the following are true EXCEPT
(A) the variable region domains contain the antigen recognition site
(B) an antigenic determinant is a paratope
(C) the class of an immunoglobulin is determined by its heavy chain
(D) an epitope is a small portion of a macromolecule

36 Which immunoglobulin is the principal one found in secretions such as milk?
(A) IgM  (B) IgA
(C) IgD  (D) IgG

37 The inflammatory response includes all of the following except
(A) increased blood flow
(B) phagocyte attack
(C) temperature increase
(D) vessel constriction

38 The different types of blood cells originate from:
(A) Haematoblastoma
(B) Myeloblast
(C) Megakaryocyte
(D) Haematopoietic stem cell

39 The immunoglobulin class which is the least abundant in the normal adult is
(A) IgA  (B) IgM
(C) IgD  (D) IgG

40 Which one of these is large granular lymphocyte?
(A) T lymphocyte  (B) Plasma cells
(C) Natural killer cells  (D) B lymphocyte
41 The antibodies that lead to precipitation reaction between antigen and antibody are known as:
(A) Agglutinin (B) Precipitinogen
(C) Agglutinogen (D) Precipitin

42 Cytokines are:
(A) Carcinogens (B) Viruses
(C) Hormone-like polypeptides (D) Bacteria

43 The class of an immunoglobulin is determined by:
(A) the J-chain (B) the heavy chain
(C) the carbohydrate (D) the variable region

44 Light chains are:
(A) not specific for each class of antibody (B) reactive with antigen
(C) have only a constant region (D) composed only of carbohydrate

45 Each of the following is a characteristic of antibodies, EXCEPT which one?
(A) they are made by activated B cells (B) they are only secreted by T-cells
(C) they can combine very specifically with antigen (D) they are proteins with variable and constant regions

46 Cell mediated immunity is mediated via ________.
(A) memory cells (B) T-cells
(C) natural killer cells (D) B Lymphocytes

47 Which of these factors is secreted by macrophages?
(A) Interleukin 6 (B) Phycotaxin
(C) Phlyotaxin (D) Interleukin 14

48 The eosinophils combat with the parasitic infections and worms through:
(A) Investigation (B) Release of cationic proteins and reactive oxygen metabolites
(C) Suppressing worm from entering cells (D) Invagination

49 Which of the following is NOT true of interleukins?
(A) They allow one cell to communicate with another cell (B) They are in need of receptors on the target cell in order to mediate their effects
(C) They are able bind antigen with a high level of specificity (D) They are cytokines produced by cells of the immune system

50 Which of the following is NOT true of T4 and T8 cell markers?
(A) These serve to distinguish different types of T-cells, e.g., helper, suppressor and cytotoxic from each other
(B) These are not found associated with immunoglobulins
(C) Both of the markers are present on ALL T-cells (D) These are both surface glycoproteins expressed on T-cells.