BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Master of Science in Biotechnology
Course Name – Immunology
Course Code - MBT201
(Semester II)

Time allotted : 1 Hrs.15 Min. **Full Marks : 60**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

Choose the correct alternative from the following :

(1) Which of the following does not protect body surfaces?
a) Skin
b) Mucus
c) Salivary amylase
d) Gut microflora

(2) Which of the following are included under Pattern recognition receptors (PRR)
a) PAMPs.
b) Lectin-like molecules.
c) Unmethylated CpG sequences
d) Lipoteichoic acid.

(3) Identify which of the following are not included under the mononuclear phagocyte system
a) Monocytes.
b) Kupffer cells.
c) Lymph node medullary macrophages.
d) Endothelial cells.

(4) Identify the correct statement regarding polymorphonuclear neutrophil (PMN)
a) Is a bone marrow stem cell
b) Contains microbicidal cytoplasmic granules.
c) Is not a professional phagocytic cell.
d) Has granules which stain with eosin.

(5) Choose the correct option
a) Complement component C3 is cleaved by C3bBb
b) Complement component C3 is cleaved by C3b
c) Complement component C3 is cleaved by Factor D
d) Complement component C3 is cleaved by Factor B

(6) Which of the following is a part of Membrane Attack Complex
a) Colicins
b) C3b3b,Bb
c) C5b,6,7,8,9
d) Properdin

(7) Which of these is TRUE about lysozyme
a) Is a cytoplasmic organelle.
b) Is a proteolytic enzyme.
c) Splits peptidoglycan.
d) Activates complement

(8) Which of the following is NOT TRUE regarding Natural killer (NK) cells

a) Respond to interferon.
b) Kill only by damaging the target cell outer membrane.
c) Contain tumor necrosis factor (TNF).
d) Contain serine proteases.

(9) Identify an initiator of acute inflammation

a) Influx of neutrophils
b) Mast cell activation.
c) increase in vascular permeability
d) None of the baove

(10) Which of the following correctly defines a hapten ?

a) It is an epitope
b) It is a paratope
c) An immunogen
d) A small chemical grouping which reacts with preformed antibodies.

(11) Identify a primary lymphoid organ among the following options

a) Lymph nodes
b) Thymus
c) Spleen
d) All of the above

(12) Which of the following lymphoid tissues is unencapsulated ?

a) Thymus
b) Lymph nodes
c) MALT
d) Spleen

(13) Identify the function which is NOT cariied out by macrophages

a) T-cell priming.
b) Antigen processing.
c) Antigen presentation to activated cells.
d) Pinocytosis.

(14) Choose the option which is correct for lymphocytes

a) When mature are only found in secondary lymphoid organs.
b) When present in the lymph are called veiled cells.
c) Recirculate between blood and lymphoid tissues.
d) Are only educated in the thymus.

(15) Identify the correct option: The spleen is largely involved with the response to antigens which are in the

a) Lungs
b) Tissues
c) Blood
d) Gut

(16) Select an example of privileged immunological site

a) Bone marrow
b) Skin
c) Testis
d) Waldeyer's ring

(17) Identify the basic unit of Ig

a) 2 identical heavy and 2 different light chains.
b) 2 identical heavy and 2 identical light chains.
c) 2 different heavy and 2 different light chains
d) 2 different heavy and 2 identical light chains.

(18) Which among the following is TRUE for Fab

a) Is produced by separation of heavy and light chains.
b) Is produced by pepsin treatment.
c) Has no interchain disulfide bonds.
d) Binds antigen.

(19) Choose the correct option regarding complementarity determining regions

a) Are in the constant part of the Ig molecule.
b) Are concerned in antigen recognition.
c) Bind to Fc receptors.
d) Occur at the C-terminal end of the Ig peptide chains.

(20) Identify the correct option regarding Recombination of V, D and J Ig gene segments

a) Only occurs in light chains.
b) Only occurs in mature B-cells.
c) Is effected by recombinase enzymes.
d) Involves heptamer-spacer-heptamer flanking sequences.

(21) Which of the following statements does not apply to IgG?

a) Appears early in the primary immune response.
b) Neutralizes bacterial toxins.
c) Can fix complement.
d) Crosses the human placenta.

(22) Identify the correct option: IgA in seromucus secretions

a) Has no J-chain.
b) Is dimeric.
c) Cannot bind to neutrophils.
d) Has no secretory piece.

(23) Which of the following is TRUE for IgM

a) Is most commonly tetrameric.
b) Is the main class of the 'natural antibodies'.
c) s a weak bacterial agglutinator.
d) Has the same number of constant domains as IgG.

(24) Which of the following is true for a given Ig isotype ?

a) A light chain constant region encoded by allelic genes.
b) A collection of hypervariable region epitopes recognized by an anti-idiotype.
c) Monoclonal.
d) Present in all normal individuals.

(25) Identify the point where classical and alternative pathways meet

a) C4b
b) C3
c) C4
d) C5

(26) Strongly immunogenic tumors appear

a) In virtually all cancers.
b) In immunosuppressed patients
c) Only in lymphoma and leukemia
d) Only in elderly patients.

(27) CD44 is a molecule which may be involved in

a) Neoplastic transformation.
b) Secretion of tumor necrosis factor.
c) Tumor surveillance.
d) Metastatic spread.

(28) The normal immunological control of tumors is referred to as:

a) Immune surveillance.
b) Immunological silence.
c) Superantigen recognition
d) Type III hypersensitivity.

(29) Which of the following is a non-organ-specific (systemic) autoimmune disease:

a) Myasthenia gravis.
b) Systemic lupus erythematosus (SLE).
c) Pernicious anemia.
d) Insulin-dependent diabetes mellitus.

(30) The first production of live but non-virulent forms of chicken cholera bacillus was achieved by:

a) Salk
b) Pasteur.
c) Sabin
d) Jenner

(31) For vaccination against mycobacterial diseases such as tuberculosis, the most important facet of the immune response to be stimulated is:

a) Cytotoxic T-cells
b) A high titer of antibody
c) Neutrophils
d) Macrophage-activating cell-mediated immunity

(32) Which one of the following diseases has been completely eradicated world-wide?:

a) Smallpox
b) Chicken pox
c) Cowpox
d) Psittacosis

(33) A small protein subunit used in a vaccine may fail to stimulate T-cell immunity because of:

a) Lack of glycosylation
b) HLA-related unresponsiveness
c) Lack of carrier determinants
d) Inherently insufficient antigen concentration

(34) A peptide immunogen:

a) Adopts a single rigid structure in solution
b) Can elicit potent antibody responses in the absence of T-cell help
c) Can be used to stimulate B-cell but not T-cell responses
d) Can mimic a part of a discontinuous epitope

(35) An antibody response to a protein vaccine can only be obtained:

a) If the molecule is first linked to a carrier
b) f the peptide bonds are maintained
c) If the molecule is glycosylated
d) If the molecule maintains discontinuous epitopes

(36) A graft between members of the same species is termed an:

a) Autograft
b) Allograft
c) Isograft
d) None of the above

(37) The human major histocompatibility complex:

a) Is not expressed as codominant antigens on the cell surface.
b) Provokes the most intense allograft reactions.
c) Contains only class I and class II genes.
d) Encodes the human leukocyte antigens (HLA) expressed only on leukocytes.

(38) Non-specific suppression of graft rejection can be achieved with:

a) Anti-NF kappa B
b) Anti-IL-5.
c) Anti-CD3.
d) Anti-CD34

(39) Graft vs host disease often accompanies transplantation of:

a) Cartilage.
b) Kidney.
c) Bone Marrow
d) Heart

(40) Hyperacute graft rejection is caused by:

a) Preformed antibody
b) CD8 lymphocytes.
c) CD4 lymphocytes.
d) Circulating immune complexes.

(41) Cytokines always act:

a) At long range.
b) By binding to specific receptors.
c) In an autocrine fashion.
d) Synergistically with other cytokines.

(42) A Cytokine receptor which is a member of the hematopoietin receptor family is:

a) IL-2 receptor.
b) IFN gamma receptor.
c) IL-8 receptor.
d) IL-1 receptor.

(43) Prior to class switching, B-cells express:

a) IgA alone
b) IgM and IgD
c) IgD alone
d) No surface Ig

(44) Cytokines:

a) Are usually around 150–200 kDa.
b) Can be pleiotropic.
c) Generally act at long range.
d) None of the above

(45) Th1 cells secrete:

a) CD4.
b) Interferon-gamma.
c) IL-4.
d) IL-6.

(46) Which one of the following cytokines can mediate release of acute phase proteins from the liver?:

a) IL-6.
b) IL-8
c) IL-12.
d) TGF beta

(47) Memory T-cells:

a) Are continuously produced directly from naive progenitors without the need for antigenic stimulation.
b) Express germ line Ig V genes.
c) Express high levels of CD44.
d) None of the above

(48) Cells bearing MHC class I plus peptide are targets for specific:

a) Th2 cells
b) B-cells.
c) Th1 cells.
d) Cytotoxic T-cells.

(49) CD8 is a marker of:

a) B-cells
b) Cytotoxic T-cells
c) An activated macrophage
d) Helper T-cells

(50) CD4:

a) Binds to MHC class II on antigen-presenting cells.
b) Is essentially an intracellular glycoprotein.
c) Is heterodimeric.
d) Is highly polymorphic.

(51) The T-cell receptor link to MHC/peptide is enhanced by interaction between MHC class II on the antigen-presenting cells with the following molecule on the T-cell:

a) CD4
b) CD2
c) CD28
d) None of the above

(52) Binding of antigen to antibody:

a) Is usually unaffected by molecular rigidity.
b) Is optimized by spatial complementarity.
c) Is unaffected by the presence or absence of water molecules.
d) Involves covalent bonding.

(53) The antigen moiety on an antigen-presenting cell recognized by the alpha beta T-cell receptor is:

a) Native protein antigen plus major histocompatibility complex (MHC) molecule.
b) Processed (peptide) antigen plus MHC.
c) Processed peptide antigen.
d) Native antigen.

(54) TCR recognition of peptide-MHC class II depends on:

a) Covalent binding.
b) A minimum of 2 peptides occupying the binding groove of each MHC molecule
c) CDR-mediated binding.
d) None of the above

(55) Cross-presentation of exogenous antigen to a b T-cells does not require the involvement of:

a) MHC class I
b) MHC class II
c) Antigen-processing
d) An antigen-presenting cell.

(56) An example of a 'nonclassical' MHC molecule is:

a) H-2 L
b) H-2E
c) H-2 m
d) HLA-C

(57) CD1:

a) Is encoded in the MHC region.
b) Can present lipid antigens.
c) Is encoded by a single gene.
d) Can present antigens to gamma delta, but not alpha beta, T-cells.

(58) Alpha beta T-cells recognizing MHC plus processed peptide can:

a) Directly kill viruses.
b) Recognize an intracellular infection.
c) Scavenge unwanted metabolic products.
d) Themselves produce antibody to directly eliminate extracellular organisms.

(59) An epitope:

a) Is usually composed of a linear sequence of amino acids.

b) Is usually associated with a concave region of the antigen.

c) Requires both antigen-binding arms of the antibody molecule for its recognition.

d) Is the area on an antigen which contacts antibody.

(60) The binding of antigen to antibody:

a) Depends on covalent interactions

b) Occurs solely by hydrophobic bonding.

c) Depends on spatial complementarity.

d) s always of high affinity.