BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(MLT)-2022
Course Name – Clinical Immunology & Serology
Course Code - BMLTC401
(Semester IV)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) The binding of CTL with antigens is facilitated by
a) CD4+ co receptor
b) CD8+ co receptor
c) TCR
d) Both a and b

(ii) Select the option that best describes a prophylactic vaccine
a) Treats existing infections
b) Prevents future infections
c) Boosts immune response
d) Alleviates symptoms

(iii) Choose the option indicating the role of adjuvants in vaccine formulation
a) They weaken pathogens
b) They enhance the immune response
c) They prevent allergic reactions
d) They improve vaccine shelf life

(iv) Choose the role of memory cells in adaptive immunity
a) They initiate the immune response.
b) They produce antibodies.
c) They provide long-term immunity upon re-exposure to a pathogen.
d) They differentiate into T cells and B cells.

(v) How does cellular immunity differ from humoral immunity?
a) Cellular immunity involves antibodies; humoral immunity involves T cells.
b) Cellular immunity targets intracellular pathogens; humoral immunity targets extracellular pathogens.
c) Cellular immunity is acquired through vaccination; humoral immunity is innate.
d) Cellular immunity is rapid; humoral immunity is slow.

(vi) Choose the type of immunity that is mediated by cytotoxic T cells
a) Humoral immunity
b) Passive immunity
c) Cellular immunity
d) Active immunity

(vii) How do vaccines contribute to immunity?
a) By providing passive immunity
b) By stimulating the production of memory cells
c) By activating natural killer cells
d) By suppressing the immune response

(viii) How does the immune system distinguish between self and non-self antigens?

a) Through the production of antibodies
b) Through the activation of T cells
c) Through cytokine signaling
d) Through tolerance mechanisms

(ix) How does fever contribute to the immune response?

a) By suppressing T cell activity
b) By enhancing antibody production
c) By activating phagocytes
d) By inhibiting cytokine release

(x) What is the result of antigen-antibody binding in precipitation reactions?

a) Formation of immune complexes
b) Agglutination of antigens
c) Formation of a visible precipitate
d) Activation of T cells

(xi) How do monoclonal antibodies differ from polyclonal antibodies?

a) Monoclonal antibodies target multiple antigens.
b) Polyclonal antibodies are produced by multiple B cell clones.
c) Monoclonal antibodies have a single specificity.
d) Polyclonal antibodies have identical epitopes.

(xii) How do antibodies contribute to virus neutralization?

a) By promoting viral replication
b) By blocking viral entry into host cells
c) By inducing cytokine production
d) By activating natural killer cells

(xiii) How does the VDRL test detect antibodies against syphilis bacteria?

a) By causing visible precipitate formation
b) By neutralizing bacterial toxins
c) By measuring enzyme activity
d) By detecting cardiolipin-antibody complexes

(xiv) How does the immune system typically distinguish between self and non-self cells?

a) By producing fewer antibodies against self-cells
b) By recognizing unique patterns on self-cells
c) By activating T cells against self-antigens
d) By suppressing immune responses against self-cells

(xv) Select the recommended timeframe for collecting blood samples for Widal test after symptom onset

a) Within 24 hours
b) Within 48 hours
c) Within 72 hours
d) Within 7 days

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Applying the knowledge of passive immunity, explain how the same can be achieved through vaccination (3)
3. Describe the types of adjuvants commonly used in vaccine formulations. (3)
4. Explain the concept of loss of immune tolerance in autoimmune diseases. (3)
5. Explain the concept of passive immunity and provide an example of natural passive immunity (3)
6. Analyze why IgM is initially produced during immune response and explain its role in precipitation of antigens (3)

OR

Analyze the significance of neutralization in antigen-antibody reactions. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Discuss about the principle of Mantoux test used for the determination of tuberculosis (5)
8. Explain how the structural features of an antigen can determine its specificity for a particular MHC molecule. (5)
9. Illustrate the role of HLA in disease detection (5)

10. Differentiate between direct and indirect ELISA (5)
11. Assess the limitations of serological tests like the Widal test in terms of specificity and the potential for false-positive results. (5)
12. Analyze the clinical significance of elevated Rheumatoid Factor in patient's blood sample (5)

OR

Analyze the differences between prophylactic vaccines and therapeutic vaccines, highlighting their respective targets, mechanisms, and clinical applications. (5)

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