



BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – DMLT-2023

Course Name – Immunology & Serology

Course Code - DMLT302

(Semester III)

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) Choose the option indicating the type of immunity that is obtained during a lifetime through exposure.

a) Acquired immunity

b) Innate immunity

c) Racial immunity

d) Individual immunity

(ii) Choose the correct option indicating the function of the spleen in the immune response.

a) Production of T cells

b) Filtration of pathogens from the blood

c) Activation of B cells

d) Maturation of macrophages

(iii) Select the option indicating the role of macrophages in the immune system.

a) They produce antibodies.

b) They directly kill infected cells.

c) They engulf and digest pathogens.

d) They release histamine during allergic responses.

(iv) Select the option indicating the correct definition of the term "epitope."

a) The part of an antigen that binds to an antibody

b) The entire antigen molecule

c) The receptor on the surface of B cells

d) The variable region of an antibody

(v) Identify the molecule that presents antigens to T cells.

a) MHC molecules

b) Antibodies

c) Complement proteins

d) Cytokines

(vi) Recognize the class of antibody that is involved in allergic reactions.

a) IgA

b) IgE

c) IgM

d) IgD

(vii) Choose the type of agglutination reaction observed in the Widal test.

a) Precipitation

b) Passive agglutination

c) Direct agglutination

d) Complement fixation

(viii) Differentiate between the role of H and O antigens in typhoid diagnosis.

- a) O antigens are used to detect carriers, H antigens detect active cases
 c) O antigens show early infection, H antigens show later stages
 (ix) Choose the correct difference between RPR and VDRL test.
 a) The antigen used in the test
 c) The use of charcoal in the RPR test
 (x) What is a common cause of a false-negative VDRL test result?
 a) The test was performed too early in the infection
 c) Heat inactivation of serum
 (xi) What is the clinical significance of a positive RF and anti-CCP result in diagnosing RA?
 a) It confirms viral infection
 c) It rules out autoimmune diseases
 (xii) Which component is added last in a direct ELISA assay to generate a measurable signal?
 a) Antigen
 c) Enzyme-linked antibody
 (xiii) Indicate the additional test that is often performed to confirm chronic Hepatitis B infection after a positive HBsAg result.
 a) Anti-HCV test
 c) Complete blood count (CBC)
 (xiv) The latex particles used in the CRP test are coated with:
 a) CRP antigens
 c) Enzymes
 (xv) Conclude the clinical significance of a Widal test showing 1:40 titer for both O and H antigens in a non-endemic area:
 a) Likely acute infection
 c) No significant infection
- b) H antigens show vaccination, O antigens show infection
 d) Both antigens are required for early infection diagnosis
 b) The detection of specific Treponemal antibodies
 d) The type of sample required
 b) Cross-reactivity with other infections
 d) Testing cerebrospinal fluid
 b) It strongly suggests RA
 d) It detects bacterial infection
 b) Substrate
 d) Blocking agent
 b) Hepatitis B DNA test
 d) Liver ultrasound
 b) Anti-CRP antibodies
 d) Fluorescent markers
 b) Likely past infection
 d) Vaccination response

Group-B

(Short Answer Type Questions)

3 x 5=15

2. How would you explain the clinical relevance of rising antibody titers in sequential Widal tests? (3)
3. Explain the significance of using a secondary antibody in an indirect ELISA. (3)
4. Explain the characteristics of primary immune response. (3)
5. Describe the pathway followed by cytotoxic T lymphocytes in neutralizing antigens. (3)
6. Justify the need for confirmation testing when Widal results are inconsistent with clinical symptoms. (3)

OR

- Evaluate the potential for false positives in CRP latex agglutination testing and suggest strategies to minimize this risk. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Summarize the differences between a hapten and a complete antigen. (5)
8. Describe the structural differences between MHC Class I and MHC Class II molecules. (5)
9. Discuss the clinical significance of ASO test. (5)
10. Evaluate the clinical implications of a positive anti-CCP antibody test in patients with ambiguous symptoms, considering the potential for early intervention. (5)

11. Assess the impact of false-positive or false-negative HBsAg results on the management and (5)
treatment of Hepatitis B patients.
12. Analyze the patterns of precipitin lines formed in Ouchterlony double diffusion to (5)
determine the identity or non-identity of antigens and antibodies.

OR

- Analyze the diffusion pattern in single radial immunodiffusion to determine the optimal (5)
concentration of antibodies for accurate antigen quantification.

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