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BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Sc.(BT)-Hons-2019/B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021

Course Name – Immunology

Course Code - BBTC402

(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) Choose the statement that is NOT true for B cell epitope:
- | | |
|---|---|
| a) B cell epitopes are soluble | b) B cell epitopes are mostly conformational determinants |
| c) B cell epitopes are mostly hydrophilic | d) B cell epitopes are hydrophobic |
- (ii) Determine the type displayed by the tuberculin skin test
- | | |
|--|---------------------------|
| a) Type IV delayed type hypersensitivity | b) Allergy reaction |
| c) Serum sickness | d) Precipitation reaction |
- (iii) Recall cells of the immune system that release lactoferrin:
- | | |
|-------------|---------------|
| a) Basophil | b) Neutrophil |
| c) T cell | d) Mast cell |
- (iv) Recall antibodies are also known as:
- | | |
|--------------------|--------------------|
| a) Delta globulins | b) Alpha globulins |
| c) Gamma globulins | d) None of these |
- (v) Identify another name for lysozyme:
- | | |
|------------------|---------------|
| a) Galactosidase | b) Muramidase |
| c) Glucoamylase | d) Invertase |
- (vi) Determine for which of the following the Innate immune responses are most effective
- | | |
|--|--------------------------------------|
| a) Common epitopes on bacteria | b) Antigens resembling self antigens |
| c) Viruses that have previously caused infection | d) Genetically engineered antigens |
- (vii) Identify the option that is not involved in inflammation
- | | |
|---------------------------------------|--|
| a) Cytokine production by macrophages | b) Migration of leukocytes out of the circulation. |
| c) Secretion of antibodies | d) Pain and swelling at the site of infection |

- (viii) Trace the factor that contributes to antigen specificity of an adaptive immune response
- a) Activation of antigen-specific lymphocytes b) Folding of antibody to fit the pathogen
- c) Lysis of only certain pathogens by neutrophils d) Phagocytosis of only certain pathogens by macrophages
- (ix) Predict which of these cells is likely to be the originator of WBCs?
- a) Cells located in pons of brain b) Primitive cells in bone marrow
- c) Primitive cells in thymus d) None of these
- (x) Determine the statement that is false for antibodies:
- a) 5 different classes of antibodies exist b) Antibodies are glycoproteins
- c) Antibodies are fibrous proteins d) Antibodies have Y shaped structure, with one arm specific for antigen binding
- (xi) Recognize the factor that inhibits Viral replication within cells
- a) IL-4 b) IFN α
- c) IL-1 d) TNF α
- (xii) Recall the role of Interferons
- a) Activate B-cells to make virus-specific antibodies b) They are Th2 cytokines
- c) They are virus proteins that interfere with activation of cytotoxic T-cells d) Inhibit virus replication by infected cells
- (xiii) Identify another name for antibody light chains:
- a) SSB proteins b) Warbler proteins
- c) Duffo proteins d) Bence-Jones proteins
- (xiv) Cite which of these is an example of TI-2 antigen for B cell activation?
- a) LPS b) Cholera toxin
- c) Teichoic acid d) Murein
- (xv) Cite the correct combination of chemical barriers of immune system:
- a) Tears, urine b) Milk, Faeces, Urine
- c) Tears, Saliva, Gastric Acid d) None of these

Group-B

(Short Answer Type Questions)

3 x 5=15

2. What are anti-microbial peptides? Give examples. (3)
3. Differentiate between naïve lymphocytes and lymphoblasts. (3)
4. Enumerate the various co-receptors on a T cell. (3)
5. Explain briefly the signals needed for B cell activation by TD antigens. (3)
6. Distinguish between Indirect ELISA, Sandwich ELISA, Competitive ELISA, (3)

OR

- Justify the use of bacterial Protein A and Protein G in immunological purposes. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. With the help of a neat schematic representation, illustrate the events that lead to B cell activation and subsequent differentiation into plasma cells in mammalian lymph nodes. (5)
8. Produce a comparative account of different APCs. Also mention the APCs in increasing order of their antigen presentation ability. (5)
9. List down the factors that generate antibody diversification and provide a short summary for each. (5)
10. Summarize the different types of vaccines for humans. (5)
11. Discuss briefly the working principle of flow cytometer. Validate how flow cytometry is useful in Leukemia Typing. (5)

12. Explain why the live attenuated influenza vaccine (FluMist) does not cause respiratory infection. (5)

OR

Explain the phenomenon of herd immunity. How does this phenomenon relate to the appearance of certain epidemics? (5)
