REV-01
BBT/08/15

2024/05

SET A

B.Sc. BIOTECHNOLOGY
FOURTH SEMESTER (REPEAT)
IMMUNOLOGY
BBT-402

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

(Objective)

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Which of the following does not protect our body surface?
   a. Skin
   b. Mucus
   c. Salivary amylase
   d. Gut microflora
2. Activation of Tc cells depend upon:
   a. Interaction with antigen-MHC class I
   b. Interaction with antigen-MHC class II
   c. Cytokines
   d. Both b and c
3. Secondary follicles are NOT found in the following:
   a. Tonsils
   b. Payer's patch
   c. Medulla of Thymus
   d. Marginal zone
4. Positive selection in thymus is to remove:
   a. T cells acting against grafts
   b. T cells acting against self-components
   c. T cells acting against BSA
   d. T cells against T cells from another individual
5. Which of the following statement is true?
   a. All immunogens are antigens but all antigens are not immunogen
   b. All immunogen are antigen and all antigen are immunogen
   c. All immunogens are not antigens and all antigens are immunogens
   d. None of the above
6. Secretory component in IgA is derived from a pathway called:
   a. Opsonization
   b. Receptor mediated endocytosis
   c. ADCC
   d. Phagocytosis
7. Properdin increases the half-life of:
   a. C5b6
   b. C4b2b
   c. C3bBb
   d. C3bBb3b
8. Which of the following does not explain prozone effect?
   a. Antibodies which cannot bind to antigens
   b. Antibodies which are univalent
   c. Antibodies which are more than antigens
   d. Antigens which are polyvalent
9. Reason for less duration needed for graft rejection in secondary response is due to:
   a. Production of memory cells during primary response
   b. Necrosis taking place in a single day
   c. No vascularization
   d. Vascularization occurring in a single day

10. Which of the following antigens – TSTA or TATA belong to a normal cell at a particular stage of development?
    a. Tumor cell
    b. Fetal cell
    c. Adult cell
    d. All of the above

11. The concept of attenuation was developed in context to:
    a. Less production of microbial cells
    b. Lessening of infectivity of the microbes
    c. Microbes becoming in active
    d. All of them

12. Plasma therapy does include:
    a. Oral vaccine
    b. Transfer of preformed antibodies
    c. Transcytosis of antibodies
    d. All of the above except b

13. Follicular Dendritic cells that do not express:
    a. Receptors for Ab
    b. Class II MHC
    c. CD28
    d. All of the above

14. The following damage cells by releasing lytic enzymes:
    a. Macrophages
    b. Neutrophils
    c. Mast cells
    d. Only a and b

15. Receptor for antibody binding in ADCC is found on the surface of:
    a. Macrophage
    b. Neutrophils
    c. Dendritic cells
    d. NK cells

16. Why IgD has an extra domain in its structure?
    a. Question is wrong
    b. Because of extra amino acids
    c. Because of an extra β sheets
    d. Because of intrachain disulphide bond

17. Which of the following does not explain antibody structure?
    a. 2 β pleated sheets with antiparallel β strands
    b. Variable domain of 110 amino acids
    c. Domain stabilized by intrachain disulphide linkage
    d. Hydrophobic bonds inside the antibody structure

18. C5 convertase is otherwise:
    a. C4b2a3b
    b. C3bBb3b
    c. Both a and b
    d. C1q4b3b

19. How results are analysed in RIA?
    a. Measure the number labeled Ag attached to Ab
    b. To assess the number free unlabeled Ag
    c. To assess the number free labeled Ag
    d. None of the above

20. How C5b of complement activation is involved in type opsonization?
    a. Upregulation of CR
    b. Increase in the generation of C3b
    c. Downregulation of CR
    d. Increase production of Abs

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Descriptive

Time : 2 hr. 30 mins. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. How can you perform precipitation in fluids? Explain the mechanism. What is the use of SRID in the field of clinical diagnosis? Explain with the help of the process. How will you interpret the results of sandwich and competitive ELISA? A patient was infected with Streptococcus. How will you determine the amount of the bacteria in solution? Explain the process. 2+2+4+2=10

2. Explain the structure of lymph node with a neat diagram. What is the mechanism of neutralization of infection in our intestine? Explain the process and give the importance of antibodies in the process. What are the similarities in action between macrophages and neutrophils? Justify your answer. Write in brief the activity of an active T_C cells. 2+4+2+2=10

3. Do you think a DTH term is misleading in tissue injury? Give your justification. An Rh negative woman is carrying an Rh positive baby for the second time. Explain the ensuing immune response in this medical condition and also suggest measures to minimize the damage. Is there any relation between type III hypersensitivity and SLE? Justify your answer with reasons. What is the importance of Ca^{2+} ions in degranulation of basophils and mast cells? Explain how NKC and antibodies cause destruction of our cells. Explain pernicious anemia. 2+3+2+3=10

4. Explain how BSA can be more immunogenic to humans than goats. How maternal antibodies give protection to the fetus? Explain it in your own language. What was the obstacle of antibody sequencing? What are the findings of H-chain sequencing? Give reasons why some vaccines include adjuvants. According to you which class of MHC is important for any immune response? Justify your answer. 2+1+1+2+2+2 =10

5. Explain the structure of MHC I molecules with a neat diagram. What is the importance of expression of class I MHC molecules during an immune response against virus infection? What determines the strength of antigen-antibody interaction? Justify your answer. What method will you use to detect the presence of an illegal compound in the serum of an athlete? Interpret the precipitation curve with a diagram. 3+2+1+2+2 =10

6. Explain the difference between classical pathway of complement activation and alternative pathway of activation. What is the outcome of down regulation of CR for C3b in preventing SLE? How viral infectivity is neutralized by complement components? Can u suggest some tests to prevent rejection of grafts during transplantation? Explain the procedure. What is the difference between malignancy and metastasis? 1+2+1+2+3+1 =10

7. What is the meaning of the term "attenuation" and what is the significance of the term in the field of vaccination? Why there is a need for increasing the permeability of the blood vessels during an immune response? Justify your answer. What is the role of memory cells in vaccination? Give reason for your answer. Expand self/non-self recognition of adaptive immunity. How immune response is achieved through chemical mediators? 2+4+2+2=10

8. Explain the structure of antibodies with help if IgM and write about its function of IgA. An individual was transfused for the first time with blood A when his blood type was B leading to its immediate rejection. Explain how an immediate response occurred. Explain how preformed antibodies against blood group antigens are produced in an individual. What will be the result of unregulated hematopoiesis? Explain how a NK cell acts on a target cell? 3+2+2+1+2 =10

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