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MCR-003-001519 Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

May / June - 2018

BT - 503 : Biotechnology

(Immunology)

(New Course)

Faculty Code : 003

Subject Code : 001519

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instruction : All questions are compulsory to attempt.

SECTION - I

1 All questions are compulsory and carry equal marks : **20**

(i) Who is regarded as father of immunology?

(ii) Define immunogen.

(iii) Write any one function of NK cells.

(iv) Give one example of Cross Reactivity.

(v) Define super-antigens.

(vi) Which amino acids are predominantly found in hinge region of immunoglobulin?

(vii) Write any one difference between MHC class I and MHC class II molecule's peptide binding cleft.

(viii) Mention the forces/bonds involved in antigen antibody interactions.

(ix) Write the main important component of HAT medium which is used in hybridoma technology.

(x) Which radioisotopes is/are generally used in labeling antigen ?

(xi) Define prozone effect.

(xii) Define and differentiate between allograft and xenograft.

(xiii) Write any one immunosuppressive drug which inhibits the transcription of interleukin genes.

(xiv) Write the name of any sex chromosome linked genetic disorder which leads to disturbed development of functional B and T lymphocytes.

(xv) What is leukocytosis and leucopenia?

(xvi) Which antibody play important role in the generation of hypersensitivity reactions.

(xvii) What is Rheumatoid factor ?

(xviii) Which antigenic structural protein component of HIV is required for fusion between virus and host cell?

(xix) What is the C3 convertase of classical pathway of complement activation?

(xx) Define hapten in reference to antigens.

SECTION - II

2 (A) Answer any **three** questions out of following six : **6**

(i) Define and differentiate between Primary and Secondary Immunodeficiency disorders.

(ii) Write two path breaking discoveries in the history of immunology.

(iii) What is redundancy in reference to cytokines?

(iv) Define adjuvants with suitable example.

(v) Define fever. How is it considered to be good from immunological point of view?

(vi) Define agglutination with suitable example.

(B) Answer any **three** questions out of following six : **9**

(i) Write short note on T lymphocytes.

(ii) Differentiate between innate and acquired immunity.

(iii) Mention the desired properties of the enzymes and antibodies used in ELISA.

(iv) Compare and contrast upon MHC class I and MHC class II molecules.

(v) Define and differentiate between affinity and avidity.

(vi) Write any three important functions of complement system.

(C) Answer any **two** questions out of given five : **10**

(i) Draw the labeled diagram of transverse section of lymph node and spleen and briefly explain the functions of different zone.

(ii) What are monoclonal antibodies? Explain the hybridoma technology for production of monoclonal antibodies.

(iii) Describe in detail about the steps of HIV virus infection with suitable diagram.

(iv) Write about different types and applications of ELISA.

(v) Give a detailed note on hypersensitive reactions.

SECTION - III

3 (A) Answer any **three** questions out of following six : **6**

(i) Define phagocytosis. What are the factors which affect phagocytosis ?

(ii) Differentiate between overlapping and non overlapping epitopes.

(iii) Differentiate between primary and secondary immune organ.

(iv) Write five characteristic features of inflammation.

(v) Write one similarity and one dissimilarity between enzyme catalyzed reaction and antigen/antibody interaction.

(vi) Write the two conventional rules which are generally followed to designate the peptide fragments generated in complement activation pathway.

(B) Answer any **three** questions out of following six : **9**

(i) Give a brief description of any three chemical barriers which help to protect the body from infection

(ii) Write any two similarities and dissimilarities between cytokines and hormones.

(iii) Describe the process flow of dimerization of Ig A antibody with diagram.

(iv) How the cytokines (e.g. IFN a/β) generate an anti-viral state in neighboring uninfected cells ? Explain with diagram.

(v) Describe the structure and role of C1 molecule of complement pathway with labeled diagram.

(vi) Write three advantages and three disadvantages of live natural vaccines.

(C) Answer any **two** questions out of given five : **10**

(i) What is hematopoiesis ? Briefly explain the development of different blood cells.

(ii) Illustrate upon different types of antibodies of immune system.

(iii) Write a detailed note on Grave's diseases.

(iv) How the maturation and activation of B cells take place? Explain.

(v) Give a detailed account of non specific immunosuppressive therapy.
