

M. SC. (BIOTECHNOLOGY) EXAMINATION, 2022

(1st Year, 2nd Semester)

SUBJECT : IMMUNOLOGY

PAPER : MSBT 233

Time : Two hours

Full Marks : 40

Answer any eight questions [8 x 5 =40]

1. Name three classes of Pattern Recognition Receptor. Mention their main functions. Which component of bacterial cell surface activates Nucleotide-binding Oligomerization Domain (NOD) like receptors (NLR). (1+3+1)
2. What is Netosis? What are they composed of? Mention the stimuli other than microorganism, which can trigger NETosis. Illustrate the side effect of NETosis. (1+1+1+2)
3. What is meant by Isotypic idiotypic and Allotypic variation of antibody? What do you understand by HAT selection? (3+2)
4. Outline the function of adjuvant? Which branches of the immunity triggered by Alum? What is Squalene? (2+2+1)
5. How the RAG 1/2 mediated recombination of V_L and J_L occurs? Explain P-nucleotide addition. (3+2)
6. Explain productive rearrangement. Why both alleles of Antibody genes are not expressed in a cell? (3+2)
7. Do T cells produce antibodies? How double positive T cell become single positive T cell, explain. (1+4)
8. How nuclear factor of activated T-cells (NFAT) is activated? Mention the role PD1 in immunosuppressive signalling in tumour microenvironment. (2+3)
9. In central tolerance what happen to B-cells if it bind strongly to self antigen? What happen when mature B cell enter germinal centre during infection? (2+3)
10. Discuss the critical role of a CD40L/CD40 interaction in the establishment of an effective thymus-dependent (TD) humoral immunity. How Cd22 functions as an inhibitory receptor for B cells? (3+2)

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11. How do natural killer T (NKT) cells work? mention the nature of its receptor and corresponding ligand? How NKT participate in innate and adaptive immunity? (3+1+1)
12. Mention four stages of type I hypersensitivity reaction? Mention the role of different mediator which are released during type I reaction. (2+3)
13. Discuss different functions of complement. How complement systems are regulated? (3+2)
14. Give an example of autoimmune disease which is mediated by stimulating or blocking antibody. Mention different cause for the development of autoimmune diseases. (3+2)
15. Give the molecular mechanism for the development of X-linked agammaglobulinemia (XLA). Mention the pathophysiology of three phases of Graft-versus-host disease (GvHD). (3+2)