

Level : B.Tech.

Year : IV

Course : BIOT 409

Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date :

SECTION "A"

[20 Q × 1 = 20 marks]

Choose and mark [X] the most appropriate alternative from each set of choices.

- The graft versus host reaction is most easily induced:
 in immunocompetent adult animals with thymic epithelial cells
 in immunodeficient recipients with the help of an adjuvant
- HIV associated immune deficiency is a result of:
 The destruction of CD8 memory cell pool during primary infection
 Autoantibodies directed to medullary stromal cells
 Hypogammaglobulinemia
 Early destruction of the CCR5+CD4+ T cells
- Superantigens:
 Are pathogenic proteins which stimulate T cell responses following MHC processing
 Interact with the Fc portion of immunoglobulins
 Induce massive production of T cell cytokines and are ultimately immunosuppressive
 Bind T cells and B cells together, activating both cells simultaneously.
- Organ graft rejection is an extremely strong cell-mediated immune response. Which of the following is **NOT** directly responsible for the strength of the immune rejection response?
 The donor graft can express MHC-1 alleles that may be foreign to the recipient.
 Donor specific dendritic cells in the grafted tissues present donor MHC-II antigen to recipient Th-cells.
 A very large fraction of the cytolytic T-cells of the recipient will bind to the donor cell MHC antigens.
 The large size of the organ graft is directly related to the strength of the induced immune response.
- Which of the following statements regarding HIV is **FALSE**?
 HIV requires a co-receptor, either CCR5 or CXCR4, for entry into a CD4 cell.
 Many CCR5+CD4+ T cells in the gut are destroyed during the first few weeks
 Mutant CCR5 receptors are associated with slow progression of HIV disease
 It is not possible to treat HIV with entry inhibitors
- Which of the following interleukin is responsible for T cell expansion after antigen recognition?
 IL-1 IL-2 IL-4 IL-5
- Which of the following conditions is **TRUE** regarding *Erythroblastosis fetalis*?
 During the first pregnancy, the exposure of Rh antigen leads to the generation of memory cells and the IgG response that is harmful during the subsequent pregnancy
 The condition may be prevented by infusing Rh IgG and reducing exposure to Rh antigen within 24-48 hours of pregnancy
 Plasmapheresis may be used to remove the antibodies from the circulation
 All of the above

KATHMANDU UNIVERSITY

End Semester Examination

18-January 2024

Level : B.Tech.

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Time : 2 hrs. 30 mins.

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SECTION "B"

[7Q. × 5 = 35 marks]

Attempt *ALL* questions.

1. Explain the mode of direct and indirect alloantigen recognition during transplantation.
2. Explain the cross regulation of cytokines.
3. Explain agglutination inhibition assay with a suitable example.
4. Discuss with an example how release of sequestered antigens triggers autoimmunity.
5. Write short note on "Conventional Approach for Vaccine Design."
6. Discuss different factors that influence the immunogenicity of a molecule.
7. Discuss why "no recovered patients" is a limitation for HIV vaccine development.

SECTION "C"

8. Give TWO differences between *ANY FIVE* [5Q. × 2 = 10 marks]
 - a. DNA vaccine and Toxoid vaccine
 - b. Synergism and Antagonism of cytokines
 - c. Type II and Type III hypersensitivity
 - d. Active and Passive immunity
 - e. Autoimmunity and Immunodeficiency
 - f. Allograft and Xenograft
9. Explain WHY/HOW for *ANY FIVE* [5Q × 2 = 10 marks]
 - a. Haptens are antigenic but not immunogenic.
 - b. Hyperacute rejection is very quick.
 - c. Rheumatoid arthritis is a hypersensitive autoimmune reaction.
 - d. Precipitation does not occur in antigen excess and antibody excess zone.
 - e. Attenuated vaccines usually do not require a booster dose.
 - f. Non-specificity of cytokines does not affect the specificity of immune system.

