KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Marks Scored:

Level : B.Tech.
Year : IV

Course : BIOT 409
Semester: I

Exam Roll No.:
Registration No.:

Time: 30 mins.

F.M. : 20
Date FEB 18 2019

SECTION "A"
[10 Q. × 1 = 10 marks]

Choose the correct answer.

1. A patient presents with an increased number of lymphocytes in his peripheral blood. Which of the following is an appropriate technique to find out which type of lymphocytes these are?
   [ ] ELISA
   [ ] RIA
   [ ] Western Blotting
   [ ] Flow cytometry analysis

2. Which of the following statements regarding graft rejection is FALSE?
   [ ] Second set rejection of allografts exhibits memory and specificity
   [ ] Allograft rejection can be mediated by lymphocytes
   [ ] Second set rejection occurs in recipients with second transplant from the same donor
   [ ] Allograft rejection does not occur if donor and recipient are matched for MHC

3. Which of the following is NOT a likely reason for reduction of CD4 T cells in HIV infection?
   [ ] Persistent immune over activation leading to apoptosis
   [ ] Lysis of infected cells by HIV
   [ ] Killing of innocent T cells
   [ ] Over production of regulatory T cells

4. The presence of _____ can hinders successful immunization.
   [ ] Adjuvants
   [ ] Cloning vector
   [ ] Cytokines
   [ ] Maternal antibodies

5. Which if the following is NOT a primary product of degranulating masts cells
   [ ] Histamine [ ] IL-12 [ ] Heparin [ ] Prostaglandins

6. The vaccine BCG is used to protect against:
   [ ] Tuberculosis [ ] Influenza [ ] Rabies [ ] Hepatitis B

7. Immunosuppressed patients are uniquely more susceptible to the development of tumors caused by which of the following
   [ ] Oncogenic virus
   [ ] UV radiation
   [ ] Chemical carcinogens
   [ ] Proto-oncogene mutation

8. An adjuvant may work by which of the following?
[ ] binding to the antigen, making it more physically complex
[ ] presenting the antigen to the T cells.
[ ] increasing the half-life of the antigen
[ ] eliciting a cross-reactive immune response

9. Place the following five steps of ELISA in the correct order. 1. Add sample serum to each well. 2. Enzyme substrate is added to each well. 3. Anti-antibodies with enzyme are added to each well. 4. Each well is coated with antigen molecules in solution. 5. Excess antigen is washed and gelatin is used to coat any surface not coated with antigen.
[ ] 5,4,3,2,1 [ ] 4,5,1,3,2 [ ] 1,2,3,5,4 [ ] 4,5,2,1,3

10. A patient seeing a rheumatologist for the first time is asked to fill out forms that include questions about family history. She recalls many family members with "arthritis," including her grandmother and great-aunt. Her mother has systemic lupus erythematosus (SLE) with arthritis symptoms and renal disease. Her mother's siblings are healthy, as are the patient's father and younger sister. This family history is most suggestive of which of the following?
[ ] a microbial infection common to all afflicted family members.
[ ] an environmental exposure that her mother encountered while growing up
[ ] X-linked Mendelian genetics
[ ] a genetic predisposition.

SECTION "B"

[5Q X 1 = 5 marks]

Fill in the blanks.

11. When a cytokine induces a target cell to produce one or more other cytokines, the cytokine is exhibiting _____.

12. _____ assay is used to confirm the presence of HIV infection in individuals who are antibody-positive by ELISA.

13. Antibody excess zone in agglutination reaction is termed as _____.

14. IgG developed in goats to be used against humans can be termed as _____ anti _____IgG.

15. The primary types of cells that operate in surveillance and destruction of tumor cells are cytotoxic T cells, NK cells and _____.

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SECTION "C"
[5Q X 1 = 5 marks]

Define the following:

16. HIV-1 Fusin co-receptors:

17. Interferons:

18. Alloimmunity:

19. Heterotopic transplantation:

20. Fc receptors:

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SECTION "D"

Attempt *ALL* questions.

1. "Cytokines are the bridge between humoral and cell mediated immunity." Explain. [5]
2. Discuss five major points that has made development of HIV-AIDS vaccine difficult. [5]
3. Discuss two major methods for tissue typing. [5]
4. Outline the steps involved in designing and commercializing a vaccine through reverse vaccinology. [5]
5. Discuss with proper example the role of sequestered antigens in autoimmune reaction. [5]
6. Explain the use of precipitin line to identify the similarities/disparities between epitopes. [5]
7. Discuss different mechanisms that a cancer cell uses to evade recognition by immune system. [5]
8. Discuss with suitable example(s) the advantages of reverse vaccinology over conventional vaccinology. [5]
9. Elaborate the statement" Graft rejection is a type IV hypersensitive reaction". [5]
10. Give *TWO* MAJOR differences between the followings (*ANY FIVE*). [5 × 2=10]
    a) Host vs Graft Disease (HVGD) and Graft vs Host Disease (GVHD)
    b) Type I and Type II hypersensitivity
    c) Direct and Competitive ELISA
    d) DNA vaccine and Whole organism vaccine
    e) Major histocompatibility complex and Minor histocompatibility complex
    f) Immunosuppression and Immunodeficiency