Marks Scored:

KATHMANDU UNIVERSITY
End Semester Examination [C]
June, 2018

Level : B. Tech.
Year : IV
Course : BIOT 409
Semester : I

Exam Roll No. :
Time: 30 mins.
F. M. : 20

Registration No.:
Date : JUN 12 2018

SECTION "A"
[10 Q. × 1 =10 marks]

Choose the correct answer.

1. The three basic types of medical treatments for HIV and AIDS include all of these EXCEPT:
   [ ] therapies to treat the symptoms and infections.
   [ ] drugs that affect the virus in some way
   [ ] heat treatments that immobilize the virus
   [ ] therapies that boost the immune system

2. A difference between organ-specific and non-organ-specific autoimmune disorders is that
   [ ] Only in organ-specific autoimmune disorders is there a greater incidence in women
   [ ] Only in non-organ-specific autoimmune diseases are anti-nuclear antibodies a frequent feature
   [ ] Circulating auto antibodies react with normal body components only in organ-specific autoimmune disorders.
   [ ] Associations with HLA are only seen in non-organ-specific autoimmunity

3. A dialysis patient on the waiting list for a kidney transplant is called one night for possible transplant of a kidney from a deceased donor. Before she is called, her stored serum is tested against donor lymphocytes looking for reactivity. This procedure will detect which of the following?
   [ ] preformed anti-donor antibody
   [ ] potential for a secondary immune response to donor HLA antigen
   [ ] potential for developing anti-donor antibody
   [ ] potential for developing anti-donor cytotoxic T cells

4. Cytokines
   [ ] Are usually around 150–200 kDa.
   [ ] Can be pleiotropic
   [ ] Generally act at long range
   [ ] Produce stable long lived mRNA

5. _____ component found in the human body can serve as a carrier molecule when bound to hapten
   [ ] Red blood cells [ ] White blood cells
   [ ] Serum proteins [ ] Plasma

6. Which theory on the origination of autoimmune diseases states that type I diabetes is triggered by a viral infection?
   [ ] Theory of immune deficiency
   [ ] Sequestered antigen theory
   [ ] Clonal selection theory
   [ ] Molecular mimicry

7. Which of the following statements is **NOT** correct?
[ ] Second set rejection of allografts exhibits memory and specificity
[ ] Allograft rejection can be mediated by lymphocytes
[ ] Second set rejection of allografts occurs in recipients who receive a second transplant from the same donor
[ ] Allograft rejection does not occur if donor and recipient are matched for MHC alleles

8. An individual with hypothyroidism and blocking antibodies specific for thyroid-stimulating hormone receptor has an autoimmune disease based on which type of immune reaction?
[ ] type I [ ] type II
[ ] type III [ ] type IV

9. Agglutination reaction in more sensitive then precipitation reaction for the detection of
[ ] antigen [ ] complement protein
[ ] antibody [ ] antigen antibody complex

10. Which of the following differentiates an antigen from a immunogen?
[ ] An antigen is a foreign molecule
[ ] An antigen can cause synthesis of antibodies
[ ] An antigen always does not elicit immune response
[ ] An antigen is usually a protein or a polysaccharide

SECTION "B"

[5Q. × 1 = 5 marks]

Fill in the blanks.

11. Precipitation reaction can be converted into agglutination reaction by coating soluble antigen onto _____.

12. _____ region in antibody confers flexibility to the molecule.

13. Mast cells and Basophiles have Fc receptors for immunoglobulin _____.

14. A polyclonal response to an infection occurs because most antigens have multiple _____.

15. When using monoclonal antibodies for treatment in humans, the mAbs must first be _____ by replacing the mouse constant region DNA with human constant region DNA,

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SECTION "C"
[5Q. × 1 = 5 marks]

Define the following:

16. Recombinant vector vaccine:

17. Second set graft rejection:

18. HIV-1 Fusin co-receptors:

19. Superantigens:

20. Immunosuppression:

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SECTION "D"

Attempt ***ALL*** questions [9 × 5 = 45]

1. Explain five unique attributes of cytokines.

2. Using an antigen in which each molecule codes one copy each of epitopes a, b, c, d, e, f, and g you inject a rabbit and successfully elicit a polyclonal antiserum containing antibodies for all 7 epitopes. If you use this antigen in one well, your antiserum in another, and another similar antigen having epitopes a, x, c, d, r, f, and q in a different well, what is the immunodiffusion pattern you get? (identity, non-identity, or partial identity) Explain the pattern.

3. Explain different therapeutic targets for HIV AIDS.

4. Explain how passenger leukocytes can accelerate graft rejection.

5. Explain two potential therapies for autoimmunity.

6. Explain *Erythroblastosis fetalis* as a hypersensitive type II reaction.

7. Write short note on development and strengths of DNA vaccines.

8. Explain different approaches used for cancer immunotherapy.

9. "Cytokines are the bridge between humoral and cell mediated immunity." Explain.

10. Give *TWO* MAJOR differences between the following [5 × 2 = 10]
    a) T tropic and M tropic HIV strain
    b) Organ specific and Systemic autoimmune disorder
    c) TH1 and TH2 cells
    d) Direct and competitive ELSA
    e) Hapten and Adjuvant
    f) Orthotopic and Heterotopic transplantation