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M. Tech.

THIRD SEMESTER EXAMINATION, 2011-12 IMMUNOTECHNOLOGY

Time: 3 Hours

Total Marks: 100

Note: (i) Attempt any FIVE questions.

(ii) Marks are indicated against each question.

1. (a) Answer the following:

 $2 \times 5 = 10$

- (i) The single best chance of a tissue graft being accepted in a human recipient is if it is:
 - A. An isograft
 - **B.** An allograft given under the cover of potent immunosuppression.
 - C. A xenograft from a pig in which the gene fro alpha-1, 3-galactosyltransferase has been 'knocked-out' and therefore the Gal epitope eliminated.
 - D. Given to a recipient that is treated with anti-CD3.
- (ii) Each of the following statements concerning a hybridoma cell is correct EXCEPT:
 - A. The spleen cell component provides the ability to form antibody.
 - B. The myeloma cell component provides the ability to grow indefinitely.
 - C. The antibody produced by a hybridoma cell is IgM, because heavy-chain switching does not occur.
 - D. The antibody produced by a hybridoma cell is homogeneous; i.e. it is directed against a single epitope.

MTBT-302(A)

- (iii) Which one of the following is the BEST method of reducing the effect of graft-versus-host disease in a bone marrow recipient?
 - A. Matching the complement components of donor and recipient.
 - B. Administering alpha interferon
 - C. Removing mature T cells from the graft
 - D. Removing pre-B cells from the graft
- (iv) Graft and tumor rejection are mediated primarily by :
 - A. Non-complement-fixing antibodies
 - B. Phagocytic cells
 - C. Helper T cells
 - D. Cytotoxic T cells
- (v) A patient with severe asthma suffers due to high level of histamines. The best treatment strategy suggested is:
 - A. Monoclonal antibodies against IgE
 - B. Corticosteroidal drugs
 - C. Recombinant IL-4
 - D. All of the above.
- (b) Give a brief account on :

 $2 \times 5 = 10$

- (i) Chimeric toxins (ii)
 - (ii) X-linked agammaglobulinemia
- (iii) Adjuvants
- (iv) Xenograft
- (v) Serotyping
- (a) Give a detailed account on mechanism adopted by the HIV virus to infect CD4⁺T cells.
 - (b) Describe the immune evasion mechanism adopted by the virus to establish itself.

MTBT-302(A)

Write short notes on any Two of the following:

 $10 \times 2 = 20$

(a) DNA vaccines

(ii) Stem cell therapy

(c) IL-12

4. Differentiate between the following :

 $5 \times 4 = 20$

- (a) TATA and TSTA
- (b) Killed and Attenuated vaccines
- (c) Active and Passive therapy
- (d) Chimeric and humanized monoclonal antibodies
- 5. Describe in detail the basic biology of Type I and Type II interferons and also mention their therapeutic potential.
- 6. Give a detailed protocol of production of mouse monoclonal antibody against IL-2 receptor and also mention its use as a therapeutic agent. 20

OR

Give a detailed account on corticosteroidal and non steroidal drugs and their mechanism of action as anti-inflammatory agents.

7. Comment the following:

 $4 \times 5 = 20$

- (a) ELISA
- (b) Hyperacute rejection
- (c) IL-20
- (d) Antimetabolites
- (e) Peptide therapy