SEAT No._____

No. of Printed Pages : 02

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Sardar Patel University
M. Sc. (III Semester) Examination
Friday, 3rd November, 2017
2.00 p. m. to 5.00 p. m.
Biochemistry
PS03CBIC02 – Immunology

Total marks: 70

Q.1 Select the right/most appropriate answer for the following: (08 marks)

A. The ROS are generated in the phagocytic cells by the enzyme complex
   a. NADPH reductase
   b. NADPH oxidase
   c. NADPH hydrolase
   d. NADP dehydrogenase

B. The antigens present n blood are presented to B cells in
   a. Lymph nodes
   b. Thymus
   c. Spleen
   d. MALT

C. Anti-isotypic antibodies will be produced against human antibody if injected as antigen in
   a. Another human being
   b. A Horse
   c. A twin
   d. All of the above

D. A non peptide lipid antigen will be presented on antigen presenting cells by
   a. MHC class I molecule
   b. MHC class II molecule
   c. non classical Class I CD1 molecule
   d. None of these

E. When cytokine acts on the nearby cell the action is called
   a. Autocrine
   b. Endocrine
   c. Synergistic
   d. Paracrine

F. Signal sequence for Ig gene segment recombination is having:
   a. A conserved nonamer and heptamer
   b. Either 12 or 23 base pairs as spacer between conserved region
   c. Both a and b
   d. None of the above

G. Who was awarded Nobel prize for the work on anaphylaxis?
   a. Charles Richet
   b. Jules Bordet
   c. Susumu Tonegawa
   d. Peter Doherty

H. Enzyme TdT generated during Ig gene rearrangement is responsible for
   a. Junctional flexibility
   b. N region nucleotide
   c. P region nucleotide
   d. T region nucleotide

Q.2 Answer/attempt **any seven** from the following: (14 marks)

a) Explain passive acquired immunity.
b) Explain allelic exclusion during Ig gene rearrangement.
c) Explain central tolerance.
d) What is SCID? Discuss specific defects leading to SCID.
e) How malignant tumors are subdivided on the basis of their tissue of origin?
f) What are superantigens? Explain their action and role.
g) Draw and label TCR complex.
h) Explain tuberculin reaction.
i) What are chemokines?

Q.3 A. Discuss signs of inflammation and steps involved in generation of inflammation at the site of infection. (06 marks)

B. Discuss role of various membrane receptors and soluble proteins in innate immune system. (06 marks)

OR

B. Discuss formation of C5 convertase enzyme complex through different pathways of complement activation. (06 marks)

Q.4 A. Discuss the mechanisms for generation of diversity in antibody variable regions. (06 marks)

B. Give an account of different types of ELISA. (06 marks)

OR

B. Discuss biological activities and effector functions of different Ig molecules. (06 marks)

Q.5 A. What is self MHC restriction? Explain experiments which revealed self MHC restriction of T_H and T_C cells. (06 marks)

B. Explain killing of target cells by Tc cells. (06 marks)

OR

B. Discuss cytosolic pathway for antigen processing and presentation of antigenic peptides. (06 marks)

Q.6 A. Discuss Type II hypersensitivity reaction. (06 marks)

B. Giving two examples discuss organ specific autoimmune diseases with the mechanism and the clinical symptoms. (06 marks)

OR

B. Discuss various primary immunodeficiency diseases. (06 marks)

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QVI Write notes on any three (3x 4)

a. molecular mechanism of IgG-IgM switch
b. Role of T_H cells in humoral response
c. Mechanism of type I hypersensitivity
d. Consequences of immune dysfunction
e. functions of Dendritic cells