SEAT No._____

SARDAR PATEL UNIVERSITY
BACHELOR OF SCIENCE (B.Sc.)
VITH SEMESTER EXAMINATION MARCH APRIL - 2018
SATURDAY, 31ST MARCH 2018
10:00 AM TO 01:00 PM
SUBJECT: BIOINFORMATICS
COURSE: US06CBNF03
(ADVANCED IMMUNOLOGY)

TOTAL MARKS: 70

Figures to the right indicate marks:

Q1. Multiple Choice questions: (1 x 10 = 10)

i) How many BCR's are present on single B cell?

A) 10,000   B) 1,00,000   C)1000   D) 100

ii) Most of the Complement proteins are synthesized by?

A) B-cells   B) T-cells   C) Hepatocytes   D) Spleen

iii) MHC-II molecules are present on:

A) TH-cells   B) TC-cells   C) NK cells   D) B-cells

iv) A single Immunoglobulin light chain is encoded by:

A) 01 gene   B) 02 genes   C) 03 genes   D) 04 genes

v) The C5 convertase of alternative pathway is:

A) C4b2a   B) C3bBb   C) C3bBb3b   D) C2b4a

vi) CD-28 would interact with:

A) CD4   B) B-7   C) CD 45   D) B-220

vii) How much time is required for development of Type-IV hypersensitivity?

A) 24 hrs   B) 12 hrs   C) 48-72 Hrs   D) Instantly

viii) Which of these, is a immunosuppressive drug?

A) Cyclosporine   B) Methotraxate   C) FK-506   D) All of these

ix) Dislodging of cancerous cells from a tumour to newer site is called:

A) Translocation   B) Transformation   C) Metastasis   D) Both A and B

x) Cancer occurs due to mutations in:

A) Oncogenes   B) Proto-oncogenes   C) Mutagenes   D) Carotenes

Q2. Short Answer type questions (Attempt any TEN)   (10 x 2 = 20 marks)

I) Make a diagrammatic representation of BCR.

II) Define Class switching.

III) Enumerate various functions of cytokines.

IV) Define complement and enumerate its functions.

V) What is the importance of gene rearrangement.

VI) Enumerate various functions of T-lymphocytes.

VII) Enumerate components of alternative complement pathway.

VIII) Define transplantation and enumerate its types.

IX) Write prevention measures for spread of HIV.

X) What is cancer? Enumerate its types.

XI) Define proto-oncogenes and mention their function.

XII) Enumerate four applications of bioinformatics in immunology.

Q.3.A) Give a comparative account of T & B lymphocytes.   (05)
Q.3.B) Explain T-cell activation with diagram.   (05)
<div align="center">OR</div>
Q.3.) With the help of labelled diagram explain B-cell maturation, activation and differentiation with relevant diagrams.   (10)

Q4.A) Draw a flowchart of classical complement pathway.   (05)
Q4.B) Write a note on various factors contributing to antibody diversity.   (05)
<div align="center">OR</div>
Q4.) Explain in detail the light chain gene rearrangement with necessary diagrams.   (10)

Q.5.A) Briefly explain various types of cytokines with their function.   (05)
Q.5.B) Explain the role of Immunosuppressive drugs with examples   (05)
<div align="center">OR</div>
Q.5.A) Briefly explain mechanism of Graft rejection.   (05)
Q.5.B) Give a comparative account of normal and cancerous cell.   (05)

Q.6.A) Define Hypersensitivity. Briefly explain Type-II Hypersensitivity.   (05)
Q.6.B) Write a short note on SCID, its causes and symptoms.   (05)
<div align="center">OR</div>
Q.6.A) Define Autoimmunity. Mention various mechanisms for generation of autoimmunity.   (05)
Q.6.B) Mention various applications of Bioinformatics in Immunology   (05)

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