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No. of Printed Pages: 02

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72

**SARDAR PATEL UNIVERSITY**

**T.Y.B. Sc. (Bioinformatics) – Sixth Semester Examination (CBCS)**

**Friday, 1<sup>st</sup> April 2016**

**2:30 p.m. to 5:30 p.m.**

**US06CBNF03 : Advanced Immunology**

**Total Marks: 70**

- Note: (1) Figures to the right indicate marks.  
(2) Draw a neat and labeled diagram, wherever necessary.

**Q. 1 Choose the most appropriate answer from the four alternatives given: [10]**

- (1) **All the BCR's present on a single B cell are?**  
A) Identical      B) Non -identical      C) of ten different kind      D) Different
- (2) **B-7 would interact with:**  
A) CD4      B) CD28      C) CD 45      D) B-220
- (3) **Both B-cells and T-cells of immune system are generated in:**  
(A) Spleen      (B) Lymph nodes      (C) Bone marrow      (D) Thymus
- (4) **Most of the Complement proteins are synthesized by?**  
A) B-cells      B) T-cells      C) Hepatocytes      D) Spleen
- (5) **Classical complement pathway is the component of:**  
A) Innate immunity      B) Acquired immunity      C) Both A & B      D) None of these
- (6) **Cytokine action is mostly :**  
A) Autocrine      B) Endocrine      C) Paracrine      D) Both A and C
- (7) **AIDS belongs to which type of immunodeficiency:**  
(A) Primary      (B) Secondary      (C) Both      (D) Tertiary
- (8) **Genes which regulate the cell cycle are known as:**  
(A) cyclins      (B) Protoncogenes      (C) Oncogenes      (D) IFN
- (9) **How much time is required for development of Type-IV hypersensitivity?**  
(A) 24 hrs      (B) 12 hrs      (C) 48-72 Hrs      (D) Instantly
- (10) **Tumorous cells are specifically killed by:**  
(A) IFN      (B) TNF      (C) Interleukin      (D) Erythropoietin

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- Q.2 Answer any TEN from the following:** [20]
- (1) Make a diagram of BCR.
  - (2) Enumerate various receptors present on TCR
  - (3) Define Class Switching
  - (4) Enumerate various factors affecting antibody diversity
  - (5) Define complement and mention its significance.
  - (6) Mention components of alternative complement pathway
  - (7) Define cytokines and enumerate various types of cytokines.
  - (8) What is cancer? Mention its types.
  - (9) What is autograft and allograft?
  - (10) Mention symptoms of SCID.
  - (11) Enumerate various applications of bioinformatics in immunology.
  - (12) What is delayed type hypersensitivity?
- Q.3 (a)** Give a comparative account of B and T lymphocytes [5]
- (b)** Explain  $T_H$  cell activation with labeled diagram [5]
- OR**
- Q.3 (a)** Explain B- cell differentiation with labeled diagram. [5]
- (b)** Briefly explain TCR with labeled diagram. [5]
- Q.4 (a)** With labeled diagram explain light chain gene rearrangement. [5]
- (b)** Give a comparative account of classical & alternative complement pathway. [5]
- OR**
- Q.4** Explain Classical complement pathway with labeled flow chart. [10]
- Q.5 (a)** Write a note on immunosuppressive drugs [5]
- (b)** Mention various functions of cytokines. [5]
- OR**
- Q.5 (a)** Mention various reasons for conversion of normal cell to cancerous cell [5]
- (b)** Briefly explain graft rejection reaction [5]
- Q.6 (a)** Write a note on Type-I hypersensitivity [5]
- (b)** Write a short note on SCID [5]
- Q.6 (a)** Briefly explain any one systemic autoimmune disorder in brief. [5]
- (b)** Discuss the role of bioinformatics in vaccine development [5]