P. P. SAVANI UNIVERSITY

Fourth Semester of B.Sc. Examination
December-2021
SSBT2070–Immunology I

28.12.2021, Tuesday **Time: 12:00 p.m. to 2:30 p.m.** **Maximum Marks: 60**

Instructions:
1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions **[10]**

1.1 Objectives **[05]**

1.1a ..... molecules are responsible for presenting antigens to T-cells

- **A** HEC
- **B** MHC
- **C** HCM
- **D** LCF

1.1b Naive Lymphocytes are the ones,

- **A** which have not encountered any antigen yet
- **B** which have encountered antigens many times
- **C** which recognizes self antigens
- **D** which have not undergone genetic rearrangement yet

1.1c Lysozyme from our saliva and tears

- **A** are not highly specific against antigens
- **B** shows high degree of specificity against antigens
- **C** target a common feature of pathogen
- **D** both A and C

1.1d Which of the following significantly improved the method of variolation

- **A** Edward Jenner
- **B** Elie Metchnikoff
- **C** Louis Pasteur
- **D** Emil von Behring

1.1e 'Molecules common to frequently encountered antigens' are recognized by the

- **A** receptors of innate immunity
- **B** receptors of adaptive immunity
- **C** both A and B
- **D** none of the above

1.1f The most appropriate theory to explain antibody diversity is .....

- **A** instructional
- **B** clonal selection
- **C** selection
- **D** Ab diversity

1.1g Tc cells require ..... for presentation of processed antigen

A Class I MHC
B Class II MHC
C Class III MHC
D Class IV MHC

1.1h Increase in the diameter of the blood vessel is known as
A Vasodilation
B Edema
C Margination
D Diapedesis

1.1i Phogocyte is involved in
A Innate immunity only
B Adaptive immunity only
C Both Innate and Adaptive immunity
D None of the above

1.1j Which of the following is the characteristic of adaptive immune response
A antigen specificity
B antibody diversity
C immunologic memory
D all of the above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

1.2a Mucous is related to humoral immune response (True/False)

1.2b Providing pre-made antibody to patient is a means of active immunization (True/False)

1.2c Injecting attenuated virus in an individual provides passive immunization (True/False)

1.2d B cell requires only processed antigen (True/False)

1.2e Innate immunity takes long time to develop (True/False)

Q.2 Short Notes (Attempt any two) [06]

A Contribution of Louis Pasteur

B Interferon

C Receptors of innate and adaptive immunity

Q.3 Explain in detail (Attempt any two) [14]

A Physical barrier

B Adaptive immune response

C Special features of 'Clonal Selection Theory' and 'Instructional Theory'

Section-II (Total Marks - 30)

Q.1 Short Questions [10]

1.1 Objectives [05]

1.1a Light chains are part of
A Fab regions
B Fc regions

C Fab and Fc regions both
D None of the above

1.1b Which of the following substances will not stimulate an immune response unless they are bound to a larger molecule?
A Antigen
B Virus
C Hapten
D Miligen

1.1c The major antibody of serum is
A IgG
B IgA
C IGM
D IgE

1.1d The major antibody in mother's milk is
A IgG
B IgA
C IgM
D IgE

1.1e IgG has .....
A 1 heavy chain and 1 light chain
B 2 heavy chain and 2 light chain
C 2 heavy chain and 4 light chain
D 3 heavy chain and 3 light chain

1.1f Antibodies exists as
A soluble form
B cell-bound receptor
C both A and B
D none of the above

1.1g One heavy chain has ..... hotspots
A 1
B 2
C 3
D 4

1.1h The myeloma cell used for hybridoma technology must be
A Ab negative
B HGPRT negative
C NADPH reductase negative
D both A and B

1.1i HGPRT enzyme is required for
A Salvage pathway
B de novo pathway
C amino acid biosynthesis pathway
D TCA cycle

1.1j Aminopterin blocks the
A de novo pathway of nucleic acid biosynthesis

B salvage pathway of nucleic acid biosynthesis
C gluconeogenesis pathway
D Glycolysis pathway

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

1.2a All immunogens are antigens (True/False)
1.2b All antigens are immunogens (True / False)
1.2c Disulfide bond connects the heavy and light chains together (True/False)
1.2d IgG is highly flexible molecule (True/False)
1.2e Typhus fever antigens are example of alloantigens (True / False)

Q.2 Short Notes (Attempt any two) [06]

A Epitopes
B Haptens
C Factors affecting immunogenecity

Q.3 Explain in detail (Attempt any two) [14]

A Classes of Antibody
B Monoclonal antibody production
C Antibody structure (IgG only) and two major roles.