

B.Sc. Semester-IV Examination, 2022-23**ZOOLOGY [Honours]**

Course ID : 42613 Course Code : SH/ZOO/403/C-10

Course Title : Immunology

Time : 1 Hour 15 Minutes

Full Marks : 25

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***UNIT-I**1. Answer any **five** from the following questions:

1×5=5

- a) Malarial parasites are intracellular and can evade immune response. Propose stage specific probable vaccine candidates for immunogenic response.
- b) CD4+ T-cell activity is the basis for tuberculin reaction characterized by large influxes of nonspecific inflammatory cells such as macrophages– write down the name of the scientists who are credited with the first description of the reaction.

- c) Acquisition of passive and active immunity occurs through antitoxin and toxoid respectively. What do you mean by antitoxin and toxoid?
- d) Charles Richet was awarded the Nobel Prize in physiology and medicine in 1913 for the discovery of anaphylaxis. What do you mean by anaphylaxis and how was that discovered?
- e) PAMPs are recognized by both soluble molecules and cell associated receptors – explain.
- f) What do you mean by CD4 and CD8? Write down the names of cells bearing CD4 or CD8.
- g) Distinguish between maturation and clonal selection of B-lymphocytes.
- h) O negative blood group is universal donor – Justify.

UNIT-II2. Answer any **two** from the following questions:

5×2=10

- a) Explain the following flow chart:
Internalized antigen+ APC → Class II MHC bound antigen +T_H cell → Activated T_H cell → Cytokines → B cell + antigen → Ab-secreting plasma cells →? 5

b) Some common manifestations of immune dysfunctions are: (i) autoimmune disease, (ii) immunodeficiency, (iii) allergies and asthma, (iv) graft rejection and (v) GVH Disease. Elaborate the cause of these diseases.

5

c) 'Dendritic cells (DCs) represent a heterogeneous family of immune cells that link innate and adaptive immunity'– Justify the statement.

5

d) With the help of a suitable diagram, describe the structure and function of peptide-loading complex of endoplasmic reticulum in peptide translocation and selection by MHC-I molecule.

5

3. Answer any **one** from the following questions:

10×1=10

a) i) Mention the role of hypoxanthine-guanine phosphoribosyltransferase, Polyethylene glycol and HAT media in the production of monoclonal antibodies. $1\frac{1}{2}+1\frac{1}{2}+1\frac{1}{2}$

ii) Describe the role of horseradish peroxidase (HRP) and alkaline phosphatase (ALP) in ELISA, mentioning their respective substrates. 1+1

iii) With the help of a suitable diagram, describe the mechanism in T cell receptor signaling. $3\frac{1}{2}$

b) Write notes on: $2\times 5=10$

i) adjuvants

ii) haptens

iii) epitopes

iv) ELISA

v) monoclonal antibody
