



Name :
Roll No. :
Invigilator's Signature :

CS/B.Sc.(H)/B.T./GENT./MICRO.BIO./MOL.BIO/SEM-3/POI-302/2012-13

2012

PRINCIPLES OF IMMUNOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Which class of antibody found on the surface of foetal cells is detected by a Coombs test ?
 - a) IgM
 - b) IgG
 - c) IgD
 - d) IgE.
- ii) Individuals with blood group A contains serum antibodies.
 - a) anti A
 - b) anti B
 - c) anti AB
 - d) all of these.
- iii) Following are true for passive immunity except
 - a) effective immediately
 - b) applicable in immuno deficient host
 - c) prolonged protection
 - d) conferred by antibodies.



- iv) Which of the following is used in providing adaptive immunity ?
- a) Hyper immune sera
 - b) Immunoglobulins
 - c) Live vaccines
 - d) Lymphocyte suspension.
- v) The action of papain on a molecule of IgG produces
- a) Two Fab + Two Fc
 - b) Two Fab + One Fc
 - c) One Fab + Two Fc
 - d) F(ab) + amino acids.
- vi) Immunoglobulin binding to receptors on effector cells is due to which portion of the immunoglobulin molecules ?
- a) Fab
 - b) Fc
 - c) Fd
 - d) Light chain.
- vii) A number of small proteins found in the blood helps in pathogen clearing forming membrane killing complexes, are termed
- a) complement
 - b) lysozyme
 - c) interferon
 - d) major basic proteins.
- viii) Plasma cells are
- a) long lived memory cells
 - b) a subclass of *T* cells
 - c) mature antibody secreting cells
 - d) only generated during a secondary immune response.
- ix) Lysozyme is present in
- a) tears
 - b) sebun
 - c) both (a) and (b)
 - d) none of these.



- x) Opsinin is a
- granuloxyte
 - chemokine
 - lysosomal enzyme
 - substance that enhance phagocytosis.
- xi) A suitable organism for use in recombinant vaccines
- influenza virus
 - smallpox virus
 - polio virus
 - vaccinia virus.
- xii) The most potent adjuvant known as
- alum
 - endotoxin
 - freund's adjuvants
 - salt solution.
- xiii) CD4 + cells are
- T-helper cells
 - cytotoxic T cells
 - macrophages
 - B cells.
- xiv) Which of the following cells participate in non-specific defense responses when your body is invaded by microbes ?
- Natural killer cells
 - Macrophages
 - Neutrophils
 - All of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following $3 \times 5 = 15$

- Write a short account on ABO blood group system.
- Describe the method of hybridoma technology for the production of monoclonal antibodies.
- Explain various antiphagocytic mechanism used by bacteria to evade immune response.
- Write a short note on 'Plant defense mechanism'.
- Define cytokines and state their role in the immune response ? $2 + 3$



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Graphically present the primary and secondary immune response. How does Ig class switch occur ?
b) What are antigenic drift and antigenic shift ? Give example of one disease where antigenic shift and drift is possible. $(4 + 5) + (4 + 2)$
8. What roles do antibody and complement play in bacterial infection ? How do T-cells act in combating viral infection ? How does endotoxin induce fever ? Name one endotoxin producing bacteria. $6 + 4 + 4 + 1$
9. What is meant by autoimmunity. State about the factors that contribute in developing autoimmune disorder. Type I diabetes is an autoimmune disorder. Comment. How HIV infection results in the impairment of the cell mediated as well as humoral immunity ? $2 + 2 + 5 + 6$
10. Define tolerance. How tolerance is developed in healthy human body. Give the molecular mechanism of transplant rejection. How transplant rejection can be avoided. $2 + 4 + 6 + 3$
11. a) What is the basic principle of radioimmunoassay ? Give a brief account of the different types of ELISA techniques used.
b) Differentiate between active and passive immunization. Why recombinant vaccine is more useful than other vaccines ? $(3 + 5) + (4 + 3)$

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