2019

M. Phil 2nd Semester Examination

LIFE SCIENCE

Paper : LSC-126

Full Marks : 40 Time : 2 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

(Advance Immunology)

Group - A

(Marks : 8)

1. Answer any ***four*** questions from the following : 4 × 2

a) How does the host cell prevent MAC formation over its surface ? 2

b) Mention the source and functions of histamine. 2

c) What is a major source of non-peptide antigens ? 2

d) State the function of invarient chain in MHC stabilization. 2

e) Mention the role of Notch signalling during T. cell development. 2

f) What do you mean by allergens ? 2

[Turn Over]

Group - B

(Marks : 16)

2. Answer any ***four*** questions from the following : 4 × 4

a) State the mechanism of formation of C5 convertase by classical complement pathway with a suitable diagram. 4

b) Discuss the development of DN 1 to double positive (DP) T- cell with special reference to cell surface reeptor. 4

c) Diagrammatically show the role of C x CR4 and CCR5 coreceptor during the entry of HN in host cell. 4

d) Discuss the immunological basis of RA emphasizing the "glycosylation defect" of immunoglobulin. 4

e) Discuss the role of auto reactive T-cells, thyroglobulin and TPO in the pathogenesis of Hasimoto disease. 4

f) Describe the structure of class - II MHC molecule with diagram.

Group - C

(Marks : 16)

3. Answer any ***two*** questions : 2 × 8

a) Researchers have prepared knockout mice with mutations in the genes that encode various complement components. Each knockout strain can not express one of the complement components listed across the top of the table below. Predict the effect of each mutation on the complement effector functions indicated in the table using the following symbols :

NE = No effect ; D = Process / function decreased but not abolished ; A = Process / function abolished.

Process / Function	Complement Component			
	C1q	C3	Factor -B	MASP-2
Formation of classical pathway C5 convertase				
Formation of alternative pathway C3 convertase				
Formation of lestin pathway C3 convertase				
Cell lysis				

b) (i) Discuss the structural homology and differences between TLR and IL-1R

(ii) Match the following TLR according to its ligand.

1. TLR 1	A. Double stranded RNA
2. TLR 9	B. Flagellin
3. TLR 5	C. Triacyl lipopeptide
4. TLR 3	D. C_pG containing DNA

(iii) Peptido glycans of Grampositive bacteria binds with TLR-2 over cell surface. How does concerned cell will respond ? Illustrate the mechanism. 2 + 2 + 4

c) (i) In vertebrates, in nate immunity collaborates with adaptive immunity to protect the host. Discuss this collaboration mentioning key points of interaction between two systems.

(ii) Draw the structure of HIV along with its different orientation of glycoprotein and peptides. 4 + 4
