M.Sc. BIOTECHNOLOGY Third Semester (Repeat) IMMUNOLOGY (MBT - 302)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20 Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any four from Question no. 2 to 8 Question no. 1 is compulsory.

- 1. What is the basic difference between primary and secondary lymphoid organs?

 Discuss the immunological functions of secondary lymphoid organs. (2+8=10)
- 2. Define inflammation. Give a diagrammatic description of the process of phagocytosis. (2+8=10)
- 3. What do you mean by hematopoesis? Draw a labelled diagram showing the formation of blood cells from an HSC. (2+8=10)
- 4. What do you mean by grafting? Discuss the immunological process of allograft rejection. (10)
- 5. Mention the major immunological functions triggered by the complement system.

 Give diagrammatic description of the alternative pathway of complement activation.

 (4+6=10)
- 6. What is an adjuvant? What are the major functions of an adjuvant? Write the structural and functional differences between Class-I and Class-II MHC molecule.

(2+4+4=10)

7. Write the statements of Burnett's "Clonal Selection" theory. Discuss briefly the process of monoclonal antibody production. (4+6=10)

8. Write the functional properties of cytokines. Discuss briefly the process of signal transduction by cytokines. (5+5=10)

Or

Define agglutination. Discuss the major steps of this reaction. How this reaction process differs from precipitation. (2+5+3=10)

REV-00 MBT/02/08

2017/08

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Marks - 20 **Duration: 20 minutes** (PART A - Objective Type) I. Match Column A with Column B: 1×5=5 Column A Column B 1) Cb5-9 i. Hematopoiesis stimulators 2) Dendritic cell ii. Membrane attack complex (MAC) 3) Dipedesis iii. Antigen presenting 4) C1 inhibitor iv. Phagocytotic migration v. Classical pathway of complement activation 5) IL-3 and IL-7 II. Choose the correct answer: 1×15=15 1. Lysozyme is present in b) Cerebro spinal fluid (CSF) a) sweat c) urine d) saliva hypersensitivity reaction. 2. Allergic Rhinitis is a clinical manifestation of a) Type I b) Type II d) Type IV c) Type III 3. A particular cytokine bound to receptors on a target cell in close proximity to the producer cell, exhibits action. a) autocrine b) paracrine d) all of the above c) endocrine 4. Coating of an antigen onto the surface of carrier particles is the basic principle of a) Active (direct) agglutination b) Passive (Indirect) agglutination c) Reverse Passive agglutination d) Hem agglutination

5.	Class I MHC molecules in	human ai	re uncoded by
	a) K and D	b) A, B,	
	c) DP, DQ, DR		the above
6.	Among the following(s)		is/are the determinants of antigenicity.
	a) Chemical nature	b) Size	of the antigen
	c) Foreignness	d) All o	fthese
7.	Major Histo Compatibility	Complex	(MHC) is a collection of genes arrayed on
	a) chromosome 21 in man,	chromos	ome 6 in mice
	b) chromosome 6 in man, c	chromoso	me 21 in mice
	c) chromosome 17in man,	chromoso	ome 6 in mice
	d) chromosome 6 in man, o	chromoso	me 17 in mice
8.	CD8 surface antigen is pre	AND DESCRIPTION OF THE PERSON	a trissail is lis flot
	a) cytotoxic T cells		ressor T cells
	c) helper T cells	d) both	(a) and (b)
0		. 4:	
9.		e disorde	r where auto-antibodies are produced against vast array of
	antigens. a) Grave's disease		h) Mysathamia Cravia
			b) Myasthemia Gravis
	c) Systemic Lupus Eryther	natosus	d) all of the above
10	T cell receptors (or TCR)	on CD4+	T cells .
	a) recognize peptides not		20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	b) recognize peptides asso		
			th MHC class II molecules.
	d) are secreted out into the		
11	Specific immunity exhibits	s four cha	racteristic attributes mediated by lymphocytes, excluding
	a) Diversity		b) Immunological memory
	c) Self and none self-recogn	nition	d) Margination
12	2.Numerous antibodies can l	be prepare	ed, against one antigen, each bind to unique epitopes.
	This antibody diversity is g	enerated	by .
			coding the variable regions of the heavy and light chains.
			eavy and light chains that form the antigen binding site.
			change their shape to bind different epitopes.
	d) Both (a) and (b).		

13. Among the followi	ng statements	is false regarding B cells.
a) B cells can under	rgo class switching	and produce a different antibody type.
b) B one marrow ste	em cells migrate to	the thymus and develop into B cells.
c) B cells synthesiz	e antibodies and pu	t them on their cell surface.
d) B cells that recog	gnize high concentr	ations of antigens (self) in the absence of other
signals undergo	apoptosis in the Bor	ne marrow.
14.Cytokines secreted	by some leukocyte	s that act upon other leukocytes are known as
a) chemokines	b) interleukins	
c) monokines	d) lymphokines	
15. The major cardinal	sign (s) of inflamm	nation include
a) rubor	b) calor	
c) dolor	d) all of the above	ve



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