	Utech
Name:	
Roll No.:	A Spanie Of Exercising 2nd Explored
Invigilator's Signature :	

CS/M.Tech (BT)/SEM-2/MBT-202/2011 2011 CELL BIOLOGY & 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:

 $10 \times 1 = 10$

- i) The foetus can be considered as
 - a) allograft
- b) xenograft
- c) heterograft
- d) isograft.
- ii) The elimination of self-reactive T cells form the Thymus is called
 - a) negative selection
- b) positive selection
- c) clonal selection
- d) apoptosis.

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[Turn over

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iii)	β2-N	Microglobulin is an integ	gral p	art of
	a)	IgM	b)	MCH Class I
	c)	MHC Class II	d)	T cell receptor.
iv)	The major force linking antigen to antibody is			
	a)	Hydrogen bonds	b)	Covalent bonds
	c)	Hydrophobic bonds	d)	Ionic bonds.
v)	Phila	adelphia chromosome is	s obs	erved in
	a)	Chronic myelocytic leu	ıkemi	a
	b)	Burkitt's lymphoma		
	c)	Wilm's tumor		
	d)	Retinoblastoma.		
vi)	An e	example of tumour-supp	oress	or gene is
	a)	Rb	b)	myc
	c)	abl	d)	ras.
vii)	Kine	etochore help is in		
	a)	spindle attachment	b)	apoptosis
	c)	centrosome formation	d)	G1-S transition.
67 (M	.Tecl	ı.) 2		



viii) Which of the following statement's is true for a second messenger?

- a) Second messenger is a cyotplasmic protein that helps in signal transduction
- b) Second messenger is a membrane protein that helps in signal transduction
- c) Second messenger is a small molecule in the cytoplasm the helps in signal transduction
- d) Second messenger is a small molecule attached to plasma membrane that helps in signal transduction.
- ix) JAK-STAT pathways is associated with signal transduction through
 - a) direct diffusion
 - b) enzyme-linked receptor
 - c) G-protein linked receptor
 - d) intracellular receptor.
- x) HRE is present in the
 - a) cytoplasm
- b) DNA
- c) plasma membrane
- d) RNA.

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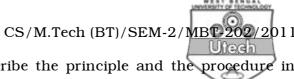
- xi) The technique for isolation and identification of a particular protein from a mixture is called
 - a) Southern blotting b) Northern blotting
 - c) Western blotting d) None of these.
- xii) FACS is the abbreviation for
 - a) Fluorescence Activated Cell Sorter
 - b) Fluorescence Activated Cell Stimulator
 - c) Fluorescence Activated Cell Sequencer
 - d) Fluorescence Activated Cytotoxicity Stimulator.

GROUP – B (Short Answer Type Questions)

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

- 2. a) Distinguish between apoptosis and necrosis. 3
 - b) Mention two important cellular characteristics of a cancer cell.
- 3. a) What is the origin of the term "Caspase"?
 - b) Describe the Caspase activation pathway by apoptosome formation.

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- What is RIA? Describe the principle and the procedure in brief.
- 5. Discuss the role of calcium as the second messenger.
- 6. Describe the change in gene expression by MAP Kinase pathway.
- 7. Explain the dynamic instability property of spindle microtubules.

GROUP – C (Long Answer Type Questions)

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

- 8. a) Explain the formation of kappa light chain by V-D-J recombination.
 - b) What do you mean by antibody affinity and antibody avidity?
 - c) Explain with a suitable diagram the structure of a typical antibody molecule.
 - d) Define the following :

Immunogen, Hapten.

1 + 1

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9.	a)	Distinguish between the structural features of MHC – I
		and MHC – 2.
	b)	Define the following: Isograft, Allograft, Xenograft,
		Autograft. 4×1
	c)	Write a short account on Graft Versus Host Disease (GVHD).
	1.	
	d)	Illustrate the classical complement pathways in the immune system.
10.	a)	Site an example of proto-oncogene activation by point
10.	aj	mutation. 5
	b)	How dose a cell become cancerous if there is a mutation
	ŕ	in the Rb gene?
	c)	"p53 has a dual role in cell cycle as well as a tumor
		suppressor gene." Justify the statement. 5
11.	a)	What do you mean by passive and active
		immunization? $2 + 2$
	b)	Discuss the basic principle behind the use of live
		attenuated bacteria or virus for vaccination. 5

d)

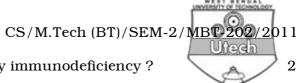
are used.

vaccination.

Name two bacteria against which attenuated vaccines

Discuss how synthetic peptide can be used for

4



- 12. a) What is primary immunodeficiency?
 - b) Name a disease caused by primary immunodeficiency. 1
 - c) With a diagram, discuss the reproduction of an AIDSvirus after entering in the CD4+ cell.
 - d) Discuss the mode of action of the anti-AIDS drug AZTand its side effects.
- 13. a) Discuss the role of autoimmunity in rheumatoid arthritis and insulin dependent diabetes mellitus. 5+5
 - b) Discuss the therapeutic approach for treatment of autoimmune diseases. 5