LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

$\textbf{M.Sc.} \ \mathsf{DEGREE} \ \mathsf{EXAMINATION} - \textbf{BIOTECHNOLOGY}$

FIRST SEMESTER - **NOVEMBER 2023**

PBT1MC04 - IMMUNOLOGY AND IMMUNOTECHNOLOGY

	Date: 08-11-2023 Dept. No.	Max.: 100 Marks			
	Time: 01:00 PM - 04:00 PM				
SECTION A – K1 (CO1)					
	Answer ALL the questions	$(5 \times 1 = 5)$			
1	Choose the best option				
a)	Which of the following arises from a myeloid progenitor?				
	i) Neutrophil				
	ii) Myelin				
	iii) Memory B-cell				
	iv) Cytotoxic T-cell				
b)	Antigens that result in excessive activation of the immune system are				
	i) hyperantigens				
	ii) superantigens				
	iii) carrier antigens				
	iv) stimulatory antigens				
c)	What a graft from a donated cadaveric organ to a recipient is a/an				
	i) autograft				
	i) allograft				
	ii) isograft				
d)	iii) xenograft Ervebo - Ebola Zaire Vaccine is a				
u)	i) live attenuated recombinant vesicular stomatitis virus				
	ii) heat-killed recombinant vesicular stomatitis virus				
	iii) DNA vaccine				
	iv) RNA vaccine				
e)	What is a radioimmunoassay intended to measure?				
<i>c)</i>	i) RIA measures the concentration of antigen by the use of antibodies.				
	ii) RIA measures the concentration of antibodies by the use of antigens.				
	iii) RIA measures the concentration of protein by the use of antibodies.				
	iv) RIA measures the concentration of insulin by the use of glycoproteins.				
SECTION A – K2 (CO1)					
		(5 - 1 - 5)			
2	Answer ALL the questions Answer in one or two sentences	$(5 \times 1 = 5)$			
a) b)	How is the MBL pathway activated?				
•	Where are MHC genes located? What are autoantibodies?				
c)					
d)	Recommend a rapid immunodiagnostic test for rheumatoid arthritis.				
e)	What are recombinant antibodies?				

SECTION B – K3 (CO2)						
	Answer a	any THREE of the following	(3 x	10 = 30)		
3	Diagramr significan	immatically represent the formation of a neutrophil. Add a note on its immunological				
4	Differentiate between epitope and paratope.					
5	Identify the type of autoimmune disorder with reasons.					
6	Sketch an image to depict different routes of vaccine administration and complete the following table					
	with respect to vaccine administration: Vaccine Route of Administration					
			Route of Administration			
		Rotavirus				
		Hepatitis B				
		Measles				
		BCG				
		Tetanus				
7	Illustrate the process of CAR T cell therapy.					
SECTION C – K4 (CO3)						
	Answer any TWO of the following $(2 \times 12.5 = 25)$					
8	Compare positive and negative selection of T-cells.					
9		Classify antigens on the basis of their origin and mention the factors that affect antigenicity.				
10		ompare the Sabin and Salk polio vaccine.				
11	Differentiate between single radial and double radial immune diffusion techniques.					
		SECTION D				
	Answer any ONE of the following			15 = 15)		
12	Relate the structure of the MHC class I molecule to its immunological function.					
13 Explain the genetic basis of antibody diversity with referce to the κ light chain.						
SECTION E – K6 (CO5) Answer any ONE of the following $(1 \times 20 = 20)$						
14		•	`	,		
14	Construct a flow chart to demonstrate the immune response of a healthy person who received a live attenuated vaccine. Add a note on challenges in vaccine development.					
15	What is h	What is hybridoma technology? Explain the process of monoclonal antibody production.				

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