LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

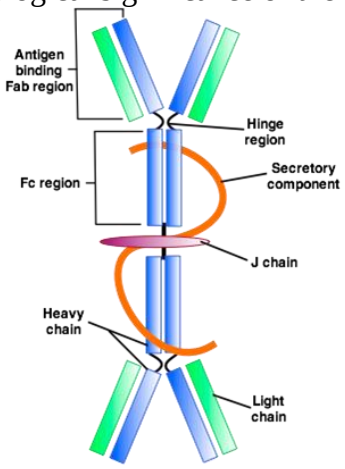
FIRST SEMESTER – **NOVEMBER 2024**

PBT1MC04 – IMMUNOLOGY AND IMMUNOTECHNOLOGY

Date: 15-11-2024 Dept. No. Max. : 100 Marks

Time: 01:00 pm-04:00 pm

	SECTION A – K1 (CO1)
	Answer ALL the questions **(5 x 1 = 5)**
1	**Choose the best option**
a)	Which of these immune cells arises from a lymphoid progenitor? i) T-cell ii) Neutrophil iii) Eosinophil iv) Basophil
b)	The heavy chain immunoglobulin genes are located on chromosome number i) 2 ii) 6 iii) 14 iv) 22
c)	Bone marrow transplantation in immunocompromised patients could lead to i) High risk of T-cell leukaemia ii) Type I Hypersensitivity iii) Myasthenia gravis iv) Potentially lethal graft vs host rejection
d)	MMR combined vaccine is a type of i) Inactivated vaccine ii) Live-attenuated vaccine iii) DNA vaccine iv) RNA vaccine
e)	In Immunoprecipitation, the point at which the ratio of antigen to antibody in a solution is optimal is called i) Zone of equivalence ii) Zone of optimisation iii) Zone phenomenon iv) Ag-Ab phenomenon
	SECTION A – K2 (CO1)
	Answer ALL the questions **(5 x 1 = 5)**
2	**Answer in one or two sentences**
a)	What are professional antigen presenting cells? Give an example.
b)	Define superantigen.
c)	State the mechanism of autoimmunity in type 1 diabetes.

d)	List one advantage and disadvantage of passive immunity.
e)	Comment on tisagenlecleucel (Kymriah).
	SECTION B – K3 (CO2)
	Answer any THREE of the following **(3 x 10 = 30)**
3	Write a note on positive and negative selection of T-cells in the thymus.
4	Identify and comment on the immunological significance of the given immunoglobulin 
5	Explain how immunosuppressive drugs work to prevent organ rejection.
6	Give an account of routes of vaccine administration.
7	Outline the main applications of immunoturbidimetry in clinical diagnostics.
	SECTION C – K4 (CO3)
	Answer any TWO of the following **(2 x 12.5 = 25)**
8	Discuss how the secondary immune response provide better protection against infections.
9	Classify antigens based on their origin and mention the factors that affect antigenicity.
10	Distinguish Type I Hypersensitivity and Type IV Hypersensitivity.
11	Compare direct and indirect ELISA.
	SECTION D – K5 (CO4)
	Answer any ONE of the following **(1 x 15 = 15)**
12	Recommend a method to assess a suitable match for an organ transplant.
13	Discuss CAR-T therapy in cancer treatment.
	SECTION E – K6 (CO5)
	Answer any ONE of the following **(1 x 20 = 20)**
14	Explain the principle and procedure of an immunodiagnostic technique for typhoid.
15	Discuss the types and challenges of Covid vaccines.

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