Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester (Odd) Examination, December 2024.

Course: Microbial Physiology and Immunology **Semester: 5**
Program: Integrated B.Sc.M.Sc. ND **Time : 03 hrs.**
Course Code: HSMB3010O **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
	Statement of question		
Q 1	Draw the structure of Antibody and label.	**4**	**CO1**
Q 2	Compare MHC I and MHC II.	**4**	**CO4**
Q 3	Discuss why all immunogens are antigens but not all antigens are immunogens.	**4**	**CO3**
Q 4	Compare Apoptosis and necrosis.	**4**	**CO1**
Q 5	Match following keywords with the below statements a) Histamine b) Dermis c) Extravasation d) Phagosomes i) Thin outer layer of skin ii) Induces vasodilation iii) Large vesicle containing ingested particulate material iv) Migration of a phagocyte through the endothelial wall into the tissues	**4**	**CO2**

SECTION B
(4Qx10M= 40 Marks)

	Statement of question		
Q7	a) Compare IgM and IgG. b) Do you think that all immunoglobulin molecules on the surface of a given B cell have the same idiotype? Explain your answer.	**5+5=10**	**CO1**
Q 8	a) Write the name of the receptors found over an APC cell. b) What is vaccine? c) Write name of two bacteria and two viral vaccines.	**4+2+4=10**	**CO2**
Q 9	a) What is monoclonal antibody? b) Discuss how hybridoma cells are selected from the mixture of other cells? c) Write three applications of monoclonal antibody.	**2+5+3=10**	**CO2**
Q 10	a) Explain step-by-step process of phagocytosis? b) What is the full form of RSS sequence?	**5+2+3=10**	**CO1**

	c) Write name of three antibody diversification processes in germline DNA.		
SECTION-C (2Qx20M=40 Marks)			
	Statement of question		
Q 11	a) What is opsonization? b) Discuss alternative pathway of complement fixation. c) How classical pathway of complement fixation is initiated? d) Discuss the radioimmune assay techniques.	**3+8+4+5=20**	**CO3**
Q 12	a) Where are the CDR regions located on an antibody molecule and what are their functions? b) Write factors that increase the variability in CDR regions. c) Write the significance of RSS sequences in immune genes rearrangement. d) Write a short note on interferons.	**5+5+5+5=20**	**CO5**