

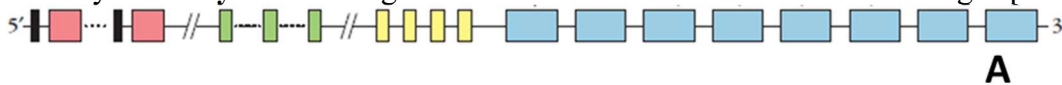
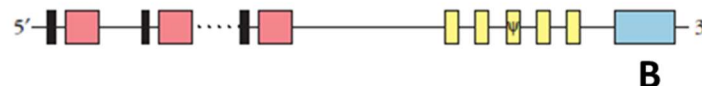
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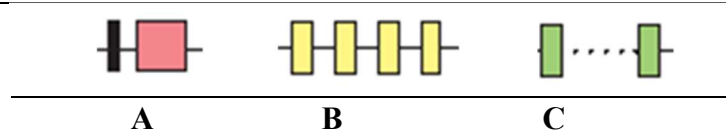
**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2022**

<b>Programme Name: M. Sc. Microbiology and N&amp;D</b> <b>Course Name : Microbial physiology and Immunology</b> <b>Course Code : HSMB7011</b>	<b>Semester : I</b> <b>Time : 180min</b> <b>Max. Marks : 100</b>
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**SECTION A**

- 1. Each Question will carry 1.5 Marks**  
**2. Instruction: Complete the statement / Select the correct answer(s)**

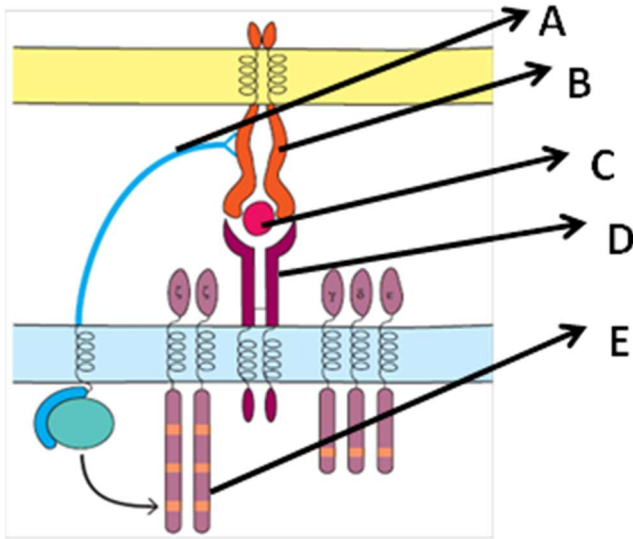
		Marks	
Q 1	Fill in the blank.  Class I and II MHC molecules expressed by only .....cells	1.5	<b>CO1</b>
Q2	NK cell recognize virus-infected cells by monitoring .....	1.5	<b>CO2</b>
Q3	A large protein antigen can induce generation of polyclonal antibodies a. True b. False	1.5	<b>CO3</b>
Q4	Both T <sub>H</sub> and T <sub>C</sub> cells recognize antigen that has been processed and presented with an MHC II molecule. a. True b. False	1.5	<b>CO5</b>
Q5	CD1 molecule binds to a unique lipid antigen a. True b. False	1.5	<b>CO5</b>
Q6	All non-self antigens are also immunogen. a. True b. False	1.5	<b>CO5</b>
Q7	T-cell receptors can only bind peptide-MHC complexes a. True b. False	1.5	<b>CO5</b>
Q8	TC cells has ..... co-receptor	1.5	<b>CO1</b>
Q9	Identify <b>Heavy chain</b> germ line DNA from the following picture  	1.5	<b>CO2</b>
Q10	Identify following DNA components of variable regions from the following picture	1.5	<b>CO2</b>



Q11	<p>Histamines is released by</p> <ol style="list-style-type: none"> <li>Basophils</li> <li>Neutrophils</li> <li>Eosinophil</li> <li>All of the above</li> </ol>	1.5	CO2
Q12	T <sub>C</sub> co-receptor recognize class.....MHC	1.5	CO4
Q13	<p>B-cell matured in thymus</p> <ol style="list-style-type: none"> <li>True</li> <li>False</li> </ol>	1.5	CO1
Q14	<p>Plasma cell release</p> <ol style="list-style-type: none"> <li>Interferon</li> <li>Antibody</li> <li>None of the above</li> <li>Both of (a) and (b)</li> </ol>	1.5	CO4
Q15	<p>Which of the following antibodies can pass maternal umbilical cord?</p> <ol style="list-style-type: none"> <li>IgG</li> <li>IgM</li> <li>IgE</li> <li>IgA</li> </ol>	1.5	CO3
Q16	<p>NK cells destroy</p> <ol style="list-style-type: none"> <li>Altered self-cell</li> <li>Cancerous cell</li> <li>Both of (a) and (b)</li> <li>None of above</li> </ol>	1.5	CO1
Q17	<p>End product of humoral immune response is</p> <ol style="list-style-type: none"> <li>Antigen</li> <li>Antibody</li> <li>Histamine</li> <li>All of the above</li> </ol>	1.5	CO3
Q18	<p>A vaccine is used to improve the</p> <ol style="list-style-type: none"> <li>Non-specific immune response</li> <li>Cell-mediated immune response</li> <li>Humoral immune response</li> <li>All of the above</li> </ol>	1.5	CO4
Q19	<p>Plasma therapy is an example of</p> <ol style="list-style-type: none"> <li>Passive immunization</li> <li>Active immunization</li> <li>Both (a) and (b)</li> <li>None of the above</li> </ol>		CO3
Q20	Write an example of viral vaccine	1.5	CO4

<b>SECTION B</b>			
<b>1. Each question will carry 5 marks</b>			
<b>2. Instruction: Write short / brief notes</b>			
Q1	a. Compare MHC I and MHC II b. What is haptten ? 4+1	4+1=5	CO4
Q2	Draw an antibody and marked different parts	5	CO2
Q3	a. Compare innate and adaptive immune response b. What is adjuvant and epitope (3+2=5)	3+2=5	CO2
Q4	a. Compare humoral and cell-mediated immunity b. Describes four characteristics of inflammations	3+2=5	CO2
<b>SECTION C</b>			
<b>1. Each Question carries 15 Marks.</b>			
<b>2. Instruction: Write long answer.</b>			
Q1	a. What is MAC? Describe its formation by any of the complement activation pathway b. What is vaccine? c. Write name of one bacterial and two viral vaccines (10+2+3)	15	CO4
Q2	a. What is apoptosis and necrosis? b. Write the importance of thymus in our immunity c. Define monoclonal antibody d. Write a short note on phagocytosis e. Full form of ITAM (4+4+2+4+1)	15	CO2
<b>SECTION D</b>			
<b>1. Each Question carries 10 Marks.</b>			
<b>2. Instruction: Write long answer.</b>			
Q1	<b>A. Match the following:</b> a. Neutrophils 1. Generally first cells to arrive at site of inflammation b. Eosinophils 2. White blood cells that migrate into the tissues and play an important role in the development of allergies c. Kupffer cells 3. Cells that are important in sampling antigens of the intestinal lumen d. Mast cells 4. Macrophages found in the liver e. M cell 5. Phagocytic cells important in the body's defense against parasitic organisms  <b>B. Compare all four types of allergic reaction</b>	5+5=10	CO1

Q2



Identify the receptors and co-receptors of the following immunologic signaling events

10

CO5