


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, May 2024</b>			
<b>Course: Pharmaceutical Biotechnology</b>		<b>Semester : VI</b> <b>Duration : 03 Hours</b> <b>Max. Marks : 75</b>	
<b>Program: B. Pharm</b> <b>Course Code: BP605T</b>			
<b>Instructions:</b> Please read all questions carefully and make sure you understand the facts before you begin answering.			
<b>SECTION A</b> <b>(20Qx1M=20 Marks)</b>			
S. No.		Marks	COs
Q 1	_____ is the primary purpose of aeration in fermentation processes. a) To reduce the growth of microorganisms b) To provide oxygen for aerobic microorganisms c) To decrease the pH of the fermentation medium d) To increase the temperature of the fermentation medium	1	CO1
Q 2	Identify which process involves the transfer of genetic material from one bacterium to another through direct contact: a) Transformation b) Transduction c) Conjugation d) Transposon	1	CO1
Q 3	Mutations that occur due to external factors such as radiation or chemicals are classified as: a) Spontaneous mutations b) Induced mutations c) Frame-shift mutations d) Point mutations	1	CO1
Q 4	Which of the following is NOT a step in the Western blotting procedure? a) Electrophoresis b) Hybridization c) Blocking d) Autoradiography	1	CO1
Q 5	Penicillins are primarily produced by which type of microorganism? a) Bacteria b) Virus c) Fungus d) Algae	1	CO1
Q 6	_____ is the purpose of processing human blood products. a) To increase clotting time	1	CO1

	<ul style="list-style-type: none"> <li>b) To remove plasma</li> <li>c) To prevent transmission of infections</li> <li>d) To decrease shelf life</li> </ul>		
<b>Q 7</b>	<p>Which microorganism is commonly used in the production of citric acid?</p> <ul style="list-style-type: none"> <li>a) Escherichia coli</li> <li>b) Aspergillus niger</li> <li>c) Saccharomyces cerevisiae</li> <li>d) Bacillus subtilis</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 8</b>	<p>Which part of the immunoglobulin molecule varies greatly among different antibodies, providing specificity?</p> <ul style="list-style-type: none"> <li>a) Constant region</li> <li>b) Variable region</li> <li>c) Fc region</li> <li>d) Fab region</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 9</b>	<p>Hybridoma technology involves the fusion of:</p> <ul style="list-style-type: none"> <li>a) B cells and T cells</li> <li>b) Antibodies and antigens</li> <li>c) Tumor cells and B cells</li> <li>d) B cells and plasma cells</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 10</b>	<p>Find which of the following blood cells play an important role in blood clotting</p> <ul style="list-style-type: none"> <li>a) Thrombocytes</li> <li>b) Neutrophils</li> <li>c) Leucocytes</li> <li>d) Erythrocytes</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 11</b>	<p>Major Histocompatibility Complex (MHC) molecules are primarily involved in:</p> <ul style="list-style-type: none"> <li>a) Cellular respiration</li> <li>b) Antigen presentation</li> <li>c) Lipid metabolism</li> <li>d) DNA replication</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 12</b>	<p>What is a primary advantage of enzyme immobilization?</p> <ul style="list-style-type: none"> <li>a) Increased enzyme activity</li> <li>b) Decreased enzyme stability</li> <li>c) Limited reusability</li> <li>d) Increased cost</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 13</b>	<p>How do biosensors typically function in pharmaceutical industries?</p> <ul style="list-style-type: none"> <li>a) By measuring biological molecules</li> <li>b) By destroying pathogens</li> <li>c) By conducting chemical reactions</li> <li>d) By generating electricity</li> </ul>	<b>1</b>	<b>CO1</b>
<b>Q 14</b>	<p>Penicillinase is an enzyme used for:</p> <ul style="list-style-type: none"> <li>a) Breaking down penicillin</li> <li>b) Synthesizing penicillin</li> </ul>	<b>1</b>	<b>CO1</b>

	c) Enhancing penicillin's potency d) Blocking penicillin's action		
<b>Q 15</b>	Which technique allows for the transfer of genetic material between different organisms? a) DNA replication b) Polymerase chain reaction (PCR) c) Recombinant DNA technology d) Gel electrophoresis	<b>1</b>	<b>CO1</b>
<b>Q 16</b>	Which of the following is a characteristic feature of eukaryotic genetic organization? a) Circular chromosomes b) Lack of histones c) Introns and exons d) Single chromosome	<b>1</b>	<b>CO1</b>
<b>Q 17</b>	Which enzyme is used to join DNA fragments together in recombinant DNA technology? a) DNA polymerase b) RNA polymerase c) DNA ligase d) Restriction endonuclease	<b>1</b>	<b>CO1</b>
<b>Q 18</b>	What is the function of restriction endonucleases in recombinant DNA technology? a) To join DNA fragments together b) To amplify DNA fragments c) To cut DNA at specific sequences d) To label DNA fragments with fluorescent markers	<b>1</b>	<b>CO1</b>
<b>Q 19</b>	Study of media in microbiology involves understanding: a) Types of microorganisms b) Growth requirements of microorganisms c) Chemical composition of media d) All of the above	<b>1</b>	<b>CO1</b>
<b>Q 20</b>	The role of annealing in the PCR process is..... a) Separating DNA strands b) Joining DNA fragments c) Identifying DNA sequences d) Binding primers to DNA template	<b>1</b>	<b>CO1</b>
<b>SECTION B (20 Marks)</b> <b>(2Qx10M=20 Marks)</b> <b>Attempt 2 Question out of 3</b>			
<b>Q 1</b>	Analyze a specific case where genetically modified crops have had a significant impact on agriculture and society.	<b>10</b>	<b>CO4</b>
<b>Q 2</b>	Compare and contrast the traditional methods and RDT for production of penicillins and citric acid, also highlighting the microorganisms involved	<b>10</b>	<b>CO5</b>

	and the key steps in each process.		
<b>Q 3</b>	Analyze the Biosensor potential over traditional methods. Explain the Principle, Working, Types and Applications of the biosensors.	<b>10</b>	<b>CO2</b>
<b>SECTION-C (35 Marks)</b> <b>(7Qx5M=35 Marks)</b> <b>Attempt 7 Question out of 9</b>			
<b>Q 1</b>	Discuss the principle and procedure of ELISA as an immuno-blotting technique.	<b>5</b>	<b>CO5</b>
<b>Q 2</b>	Write the types and structures of MHC molecules.	<b>5</b>	<b>CO5</b>
<b>Q 3</b>	Compare and contrast the principles of Western blotting and Southern blotting techniques.	<b>5</b>	<b>CO4</b>
<b>Q 4</b>	Describe the different types of mutations, including point mutations, insertions, deletions, and frameshift mutations.	<b>5</b>	<b>CO4</b>
<b>Q 5</b>	Explain the polymerase chain reaction technique, highlighting its significance in diagnostic applications.	<b>5</b>	<b>CO4</b>
<b>Q 6</b>	Discuss the applications of microbes in biotransformation?	<b>5</b>	<b>CO4</b>
<b>Q 7</b>	Define the processing steps for whole human blood, focusing on separation techniques for blood components such as red blood cells, plasma, and platelets	<b>5</b>	<b>CO3</b>
<b>Q 8</b>	Explain the importance of immobilization. Describe its types in brief.	<b>5</b>	<b>CO2</b>
<b>Q 9</b>	Write the differences in the regulation of gene expression of Prokaryotic and Eukaryotic organisms.	<b>5</b>	<b>CO2</b>