Total No. of Questions: 3 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Pharmacy

End Sem (Even) Examination May-2022

PY3CO27 Pharmaceutical Biotechnology

Programme: B. Pharma Branch/Specialisation: Pharmacy

Duration: 3 Hrs. **Maximum Marks: 75**

Note: All questions are compulsory. Internal choices, if any, are indicated.

Q.1 i. Which of the following is an example of Electrical Biosensor? **2**
(a) Potentiometric (b) Amperometric
(c) Conductimetric (d) All of these

ii. Serine proteases is an- **2**
(a) Alkaline proteases (b) Acidic proteases
(c) Neutral proteases (d) None of these

iii. Which of the following Restriction Endonuclease produces sticky or cohesive ends- **2**
(a) PstI (b) EcoRI (c) SmaI (d) All of these

iv. Example of Shuttle vector is- **2**
(a) pSC101 (b) YEp24 (c) pBr322 (d) pUC 19

v. The Effector cell for Cell Mediated Immunity is- **2**
(a) T lymphocytes
(b) B lymphocytes
(c) Antigen presenting Cell
(d) Major Histocompatibility Complex

vi. The heavy chain of IgG is- **2**
(a) μ (b) γ (c) δ (d) α

vii. The transfer of DNA by direct cell to cell contact by the bacterium is called as- **2**
(a) Transformation (b) Conjugation
(c) Transduction (d) Transposable element

viii. Fertility factor is denoted as- **2**
(a) F+ (b) F- (c) Hfr (d) F'

ix. The carbon source of Fermentation Media is- **2**
(a) Molasses (b) Malt Extract
(c) Whey (d) All of these

P.T.O.

x. The microorganism used in the Production of Vitamin B12 is- **2**
(a) Pseudomonas fluorescence
(b) Streptomyces olivaceus
(c) Penicillium chrysogenum
(d) Penicillium notatum

Q.2 Attempt any two:

i. Define immobilization and explain different methods of immobilization with applications. **10**

ii. Define rDNA technology. Write about the production of insulin by rDNA technology. **10**

iii. (a) Define biosensor. Explain its types and mechanism of working of biosensors. **5**
(b) Write a note on PCR. **5**

Q.3 Attempt any seven: Two questions from each section is compulsory.

Section - A

i. Describe the Production of monoclonal antibodies by Hybridoma technology. **5**

ii. Write a note on structure of immunoglobulin. **5**

iii. Describe different types of Hypersensitivity reactions. **5**

Section - B

iv. Write a note on Transposable elements. **5**

v. Discuss Microbial biotransformation. **5**

vi. Write a brief note on ELISA with diagram. **5**

Section - C

vii. Define fermentation, explain in detail the design and operation of conceptual fermentor. **5**

viii. Write a short note on Fermentation of Penicillin. **5**

ix. List out various blood products and describe collection, processing and storage of whole human blood. **5**

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Marking Scheme
PY3CO27 Pharmaceutical Biotechnology

Q.1	i.	Which of the following is an example of Electrical Biosensor? (d) All of these		**2**
	ii.	Which of the following Restriction Endonuclease produces sticky or cohesive ends- (b) EcoRI		**2**
	iii.	Example of Shuttle vector is- (b) YEp24		**2**
	iv.	The Effector cell for Cell Mediated Immunity is- (a) T lymphocytes		**2**
	v.	The heavy chain of IgG is- (b) γ		**2**
	vi.	The transfer of DNA by direct cell to cell contact by the bacterium is called as- (b) Conjugation		**2**
	vii.	Fertility factor is denoted as- (a) F+		**2**
	viii.	The carbon source of Fermentation Media is- (d) All of these		**2**
	ix.	The microorganism used in the Production of Vitamin B12 is- (b) Streptomyces olivaceus		**2**

Q.2		Attempt any two:		
	i.	Definition of immobilization	2 marks	**10**
		Different methods of immobilization	2 marks	
		Explaining each method	4 marks	
		Applications	2 marks	
	ii.	Definition of rDNA technology	2 marks	**10**
		Description of insulin	2 marks	
		Production of insulin by rDNA technology	6 marks	
	iii.	(a) Definition of biosensor	1 mark	**5**
		Its types	2 marks	
		Mechanism of working of biosensors	2 marks	
		(b) PCR	1 mark	**5**
		Principles of PCR	2 mark	
		Steps in PCR	2 mark	

Q.3		Attempt any seven: Two questions from each section is compulsory.		
		Section - A		
	i.	Defining Hybridoma technology	1 mark	**5**
		HAT Medium	1 mark	
		Production steps of monoclonal antibodies	3 marks	
	ii.	Immunoglobulin	1 mark	**5**
		Structure of immunoglobulin	2 marks	
		Explanation of Structure	2 marks	
	iii.	Hypersensitivity reactions	1 mark	**5**
		Types of Hypersensitivity reactions	1 mark	
		Describe type of Hypersensitivity reactions	3 marks	
		Section - B		
	iv.	Transposable elements	1 mark	**5**
		Types of Transposable elements	1 mark	
		Description	3 marks	
	v.	Definition of Microbial biotransformation	2 marks	**5**
		Any 3 types (1 mark * 3)	3 marks	
	vi.	ELISA	1 mark	**5**
		Types of ELISA	2 marks	
		Describe any one type of ELISA	2 marks	
		Section - C		
	vii.	Definition of fermentation	1 mark	**5**
		Design of Fermentor diagrams	2 marks	
		Operation of fermentor	2 marks	
	viii.	About Penicillin	1 mark	**5**
		Production Strain	1 mark	
		Fermentation Media	1 mark	
		Fermentation process parameters	1 mark	
		Product recovery	1 mark	
	ix.	Various blood products	2 marks	**5**
		Describe collection, processing and storage of whole human blood. (1 mark each)	3 marks	

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