

Name:
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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Theory Examination, May 2022

Course: Pharmaceutical Biotechnology
Program: B. Pharm.
Course Code: BP 605T

Semester: VI
Time: 03 hrs.
Max. Marks: 100

Instructions: Attempt all the questions

SECTION A

S. No.	CO	Multiple Choice / Objective / Short Answer Questions (20X1)	Marks
Q1			20
1	CO1	List two advantage of enzyme immobilization	1
2	CO1	What do you understand by rational protein design?	1
3	CO1	What is genetic engineering?	1
4	CO1	When the physical change produced in a biosensor is due to the movement of electrons produced in a redox reaction, the biosensor is referred to as _____ a) Calorimetric biosensor b) Potentiometric biosensor c) Piezo-electric biosensor d) Amperometric biosensor	1

5	CO2	A method used to insert DNA molecules into the cells by using short electrical impulses is known as (a) Biolistics (b) Microinjection (c) Liposomes (d) Electroporation	1
6	CO2	What are cosmid vectors?	1
7	CO2	_____ is used for the production of c DNA? (a) DNA polymerase (b) Reverse transcriptase (c) Endonucleases (d) Ligases	1
8	CO2	The genetically engineered Golden Rice synthesizes large amount of a) Vitamin C b) B-carotene and ferritin c) Biotin d) Lysine	1
9	CO3	Define antigen.	1
10	CO3	_____ of the following vaccine has highest immunogenicity contains Live attenuated pathogen Toxoid vaccine DNA vaccine RNA vaccine	1
11	CO3	Define antitoxins.	1
12	CO3	Write the applications of antitoxin with the help of an example.	1
13	CO4	Define ELISA	1
14	CO4	For each of the following mutations, is it a transition, transversion, addition, or deletion? The original DNA strand is 5'-GGACTAGATAC-3' (Note: Only the coding DNA strand is shown.) A. 5'-GAACTAGATAC-3' C. 5'-GGACTAGTAC-3'	1
15	CO4	List two applications of ELISA.	1
16	CO4	Bacterial chromosome requires histones for packaging. Justify your choice. a) True b) False	1

17	CO5	Which of the following is not a stage of product recovery? a) Removal of solids b) Selection of organism c) Purification and concentration d) Cell disruption	1
18	CO5	Which of the following is used to pack columns in adsorption chromatography? a) Carbon b) Silica gel c) Potassium hydroxide d) Aluminium oxide	1
19	CO5	Which of the following is not a scale-up process? a) Laboratory to pilot-scale b) Pilot-scale to industrial-scale c) Industrial to pilot-scale d) Laboratory to industrial-scale	1
20	CO5	During continuous culture/fermentation, nutrients in the fermenter are utilized at a fast rate. a) True b) False	1

SECTION B			
Long Answers (Answer two out of 3) 2X10			
Q2			20
1	CO1	With the help of a schematic flowchart, explain the working of enzymatic biosensors used in Biotechnology	10
2	CO2	What are antibiotics? With the help of a neat flowsheet diagram, explain the large-scale production of penicillin	10
3	CO3	With the help of examples, describe different types of hypersensitivity reactions.	10
SECTION C			
Short Answers (Answer 7 out of 9) 7X5			
Q3			35
1	CO1	Discuss two advantages and two concerns pertaining to applying biotechnology to food items.	5
2	CO1	Discuss the significance of enzyme immobilization in biotechnology	5
3	CO2	Explain with the help of a flowchart, rDNA process involved in the production of insulin	5
4	CO2	What are the 3 essential components of a cloning vector? Which type of vector can be used for inserting a DNA fragment of size ~200 kb and cloning inside eukaryotic cells?	5
5	CO3	With the help of examples, discuss future of vaccines.	5
6	CO4	With the help of diagram, describe three levels of packaging in eukaryotes.	5
7	CO4	Compare and contrast Western and Southern Blotting.	5
8	CO5	List three industrial products that utilizes microorganism for their production. Mention the name of product and the microorganism that produce it.	5
9	CO5	Medium formulation is an essential stage in the design of successful laboratory experiments, pilot plant development and manufacturing process. Discuss the statement.	5
		Total	75