

KATHMANDU UNIVERSITY  
End Semester Examination  
June/July 2024

Marks Scored:

Level : B.Pharm.  
Year : IV

Course : PHAR 422  
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date **1-1 JUL 2024**

SECTION "A"

[20Q. × 1 = 20 marks]

**Choose and encircle the most appropriate option from each set of choices.**

- Which of the following is **NOT** the characteristic of biopharmaceutical drugs?
  - These are high molecular weight proteins.
  - These are lipophilic in nature.
  - These are relatively unstable.
  - These are biologically synthesized.
- Bt gene from *Bacillus thuringiensis* is introduced into the plant to \_\_\_\_\_
  - make the plant resistant against many insects
  - to enhance the shelf life
  - to make the plant enriched in vitamin A
  - to produce the therapeutic proteins
- \_\_\_\_\_ are the ribonucleic acid that catalyze the cleavage of RNA and DNA molecules.
  - Abzymes
  - Extremozymes
  - Ribozymes
  - Isozymes
- The enzyme phosphatases that hydrolyze phosphate-ester bond in all types of phosphate esters exhibit \_\_\_\_\_ specificity.
  - group
  - absolute
  - stereo chemical
  - linkage
- Which of the following method does **NOT** require carrier material for enzyme immobilization?
  - Cross-linking
  - Entrapment
  - Adsorption
  - Covalent bonding
- Which of the following statement about enzyme immobilization is **FALSE**?
  - Use of immobilized enzyme will decrease the product contamination.
  - Immobilized enzyme can be used for continuous production system.
  - Immobilized enzyme can be used for both soluble and insoluble substrate.
  - Immobilized enzyme can be used for non-aqueous system.
- Which of the following is **NOT** a criterion for the choice of an organism used in fermentation?
  - The organism must be genetically stable.
  - The organism must be able to produce a high yield of product.
  - The organism must be able to grow in an easily available nutrient medium.
  - The organism is difficult for long term preservation.



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Time : 2 hrs. 30mins.

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Semester : II  
F. M. : 55

SECTION "B"

[5 Q. × 3 = 15 marks]

Attempt *ANY FIVE* questions.

1. Define old and new biotechnology with suitable examples.
2. Why adjuvants are added in vaccine preparation?
3. Mention the properties of ideal carrier for enzyme immobilization.
4. Describe the structure of DNA.
5. Write about the fermentation media.
6. What is intellectual property right? List down its advantages.
7. Describe in brief about the protein structure.

SECTION "C"

[5 Q. × 5 = 25 marks]

Attempt *ANY FIVE* questions.

8. Write short notes on trademark and copyright.
9. Describe the adsorption and entrapment method of enzyme immobilization.
10. What are the stabilizing forces responsible for protein native conformation?
11. What is monoclonal antibodies? How hybrid cells are selected during murine monoclonal antibody production?
12. What are the containment requirements for different biosafety levels?
13. Classify modern vaccine. Describe any two type of modern vaccine.
14. What is polymerase chain reaction? Write about the steps in polymerase chain reaction.

SECTION "D"

[2 Q. × 7.5 = 15 marks]

Attempt *ANY TWO* questions.

15. What are the factors affecting the enzyme activity? Describe the mechanism of enzyme catalytic action.
16. What is fermentation? Explain the various steps involved in downstream processing of fermentation products.
17. What is recombinant DNA (rDNA)? Write about the technique of inserting rDNA into host cells. How the transformed host cells are selected?

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