30/6/22 M

Roll Number ---------- (Total Number of Questions 13) (Total number of Printed Pages 01)

Programme	B. Pharmacy
Semester	6th
Subject	Pharmaceutical Biotechnology
Subject Code	BP605T
Paper ID	77990
Time	3Hours
Maximum Marks	75

Instructions to Candidates:*No supplementary/continuation sheet will be issued to the candidates. Answer the questions precisely.*
Section A consists of Ten parts of 2 marks each (Objective Type); Attempt **ALL.*
***Section B consists of Three questions carrying 10 marks each (Long Answer); attempt any **TWO**.*
****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section A (10 X2 = 20)

1. Give very short answers to the followings (2 marks each):

i.	Define Immunity and its type.
ii.	Define Haptens.
iii.	What are Auxotrophs and Protrophs.
iv.	Define Plasma substitute.
v.	Explain structure and functions of MHC.
vi.	What is role of mutants in fermentation?
vii.	What are typical components used in fermentor media.
viii.	What do you mean by Biotechnology?
ix.	Write the difference between vaccine and antibiotics.
x.	Write the difference between toxin and toxoid.

Section B (2 X 10 = 20)

2.	What are Monoclonal antibodies? Discuss their production.
3.	How bacteria are immobilized? Explain streptokinase.
4.	Explain in detail the fermentation process for the production of Vitamin B12.

Section C (7 X 5 = 35)

5.	Write a note on mutant isolation.
6.	Discuss the advantages of continuous culture over batch culture.
7.	Discuss the production of ethanol by fermentation.
8.	Draw well labeled diagram of anaerobic fermenter and discuss its working.
9.	Explain western Blotting and southern blotting.
10.	Explain Microbial biotransformation with its applications.
11.	What do you understand by protoplasts fusion? Describe various aspects of spontaneous and induce fusion.
12.	Write the difference between prokaryotes and eukaryotes.
13.	Describe the factors influencing rate of mutation.

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31 MAY 2023

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Section- A **(10 X2 = 20)**

1.	Give very short answers to the followings:
i.	Define MHC.
ii.	What are immuno suppressants?
iii.	Define point mutation.
iv.	What are epitopes?
v.	What are plasma subsitutes?
vi.	Give uses of enzyme protease.
vii.	Differentiate between active and passive immunity.
viii.	What are interferons?
ix.	What is whole human blood?
x.	Define fermentation.

Section- B **(2 X 10 = 20)**

2.	Explain hydridoma technology with its applications.
3.	Write a detail note on Penicillin.
4.	Explain Biotechnology with reference to pharmaceutical sciences.

Section- C **(7 X 5 = 35)**

5.	Discuss the role of various techniques of protein engineering.
6.	Explain western blotting technique.
7.	What are the different techniques of enzyme immobilization?
8.	Explain hypersensitivity reactions.
9.	Explain ELISA test and its importance.
10.	Write a note on microbial biotransformation.
11.	Give applications of genetic engineering.
12.	Explain working of biosensor.
13.	Write a note on vitamin B_{12}.

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14/6/24 (E)

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***Section B consists of Three questions carrying 10 marks each (Long Answer); attempt any **TWO**.*

****Section C consists of Nine questions carrying 5 marks each (Short Answer); attempt any **SEVEN**.*

Section- A **(10 X2 = 20)**

1.	Give a very short answers to the followings:
i.	Define biosensor. Elaborate briefly on its working principle.
ii.	Differentiate between humoral and cell-mediated immunity.
iii.	Define briefly the specific reasons behind immune stimulation.
iv.	Write about the different applications of microbial transformation reactions.
v.	Justify briefly the role of conjugation for the transfer of genetic material among microbes.
vi.	Write about the different properties of plasmid as a transmissible material.
vii.	Write the storage conditions for BCG vaccine.
viii.	Write about the different applications of protease in the pharmaceutical industry.
ix.	What are the ideal requirements of plasma substitutions?
x.	Elaborate briefly on immunosuppression.

Section- B **(2 X 10 = 20)**

2.	Deliberate upon the principle behind PCR. Give its applications.
3.	Write in detail the principle and production methodology for hybridoma production.
4.	Describe the steps involved in the production process of penicillin.

Section- C **(7 X 5 = 35)**

5.	Write the characteristics of cloning vectors. Justify the plasmid as a cloning vector.
6.	Discuss the different applications of biotechnology in pharmaceutical sciences.
7.	Elaborate in detail about the major histocompatibility complex.
8.	Explain the different sterilization methods for fermentation.
9.	Describe the collection, processing, and storage of whole human blood.
10.	Write the different steps in the preparation of bacterial vaccines.
11.	Write the various methods of enzyme immobilization technique.
12.	Write the principle and process behind Western blotting-based reactions.
13.	What is transformation? Define the mechanism behind transformation.

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(Morning)
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Section- A (10 X2 = 20)

1	Give very short answers to the followings:
i.	What are ideal requirements of plasma substitutes?
ii.	Enlist different applications of genetic engineering.
iii.	Write the role of DNA ligase.
iv.	Compare the different types of hypersensitive reactions.
v.	Define toxoids. Classify it with examples.
vi.	Justify that IgG is different from IgA.
vii.	What are transposons?
viii.	Write the different applications of lipase in pharmaceutical industry.
ix.	Write principle behind PCR.
x.	Explain the principle behind working of southern blotting.

Section- B (2 X 10 = 20)

2.	Describe rDNA technology with its applications.
3.	Elaborate the steps involved in production process of penicillin.
4.	Explain various methods of enzyme immobilization and its application.

Section- C (7 X 5 = 35)

5.	Explain the microbial transformation, with suitable examples.
6.	Summarise the different types of mutations.
7.	Describe the uses and storage of dried human plasma BP.
8.	Describe the different types of factors affecting fermenter design.
9.	Write the Principle behind the ELISA based reactions.
10.	What are different types of restriction endonucleases. How linkers are different from adaptors.
11.	Write a short note on biosensors.
12.	Explain cloning vectors with its characteristics.
13.	Explain the different types of hypersensitive reactions.

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*******Section-*** *B consists of three questions, each carrying 10* ***marks*** *(Long Answer Type);* ***Attempt any two.***
********Section- C* ***consists*** *of nine questions,* ***each carrying*** *5 marks* ***(Short Answer Type);*** *Attempt any seven.*

Section- A **(10X2=20)**

1.	Give very short answers to the followings:
i.	What is PCR?
ii.	Expand ELISA and mention any two of its applications.
iii.	What is fermentation?
iv.	Name any two blood products and state their applications.
v.	Define vectors and give two examples.
vi.	What are antitoxins? Write one example.
vii.	Mention the pharmaceutical applications of biosensors.
viii.	Define immunosuppressive agents with examples.
ix.	Enlist natural polymers used for immobilization.
x.	Define toxoids and give two examples.

Section- B **(2X10=20)**

2.	What do you understand by enzyme biotechnology? Discuss the various methods of enzyme immobilization.
3.	Describe different types of fermenters and their applications in pharmaceutical sciences.
4.	Define immunity and explain the general method for the preparation of bacterial vaccines and toxoids.

Section- C **(7X5=35)**

5.	What are vaccines? Classify the types of vaccines with examples.
6.	Classify immunity. Highlight the differences between active and passive immunity.
7.	Mention the production process and therapeutic uses of amylase.
8.	Outline the structure and role of MHC briefly.
9.	Present a short note on insulin production using rDNA technology.
10.	Provide a concise note on microbial biotransformation and its pharmaceutical applications.
11.	Illustrate the steps involved in the Western blotting technique along with its uses.
12.	Write in brief about procedure for collection, processing, and storage of whole human blood.
13.	State the functions of restriction endonuclease and DNA ligase.

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(Evening)
19 12 25

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****Section -C consists of Nine questions carrying 5 marks each (Short Answer); attempt any SEVEN.*

Section- A **(10X2=20)**

1.	Give very short answers to the followings:
i.	Define biosensor with example.
ii.	Write about the differ type of immunity.
iii.	Give the expended form of MHC.
iv.	Write two application of PCR.
v.	What is ELISA? State its basic principle.
vi.	Define plasma substitute.
vii.	State types of mutants.
viii.	Differentiate prokaryotes vs eukaryotes.
ix.	What is a viral vaccine?
x.	Define protein engineering.

Section- B **(2X10=20)**

2.	What is enzyme immobilization? Write its methods and applications.
3.	What is fermentation? Explain in brief large scale production fermenter design and its control.
4.	Briefly explain collection, processing and storage of dried human plasma and plasma substitutes.

Section- C **(7X5=35)**

5.	Working and applications of biosensors in pharmaceutical industries.
6.	Write about the production of penicillin.
7.	Write storage and stability condition of official vaccines.
8.	Define protein engineering. Write principle and applications of genetic engineering.
9.	Give the structure and functions of MHC.
10.	Write a basic principle of PCR.
11.	Write an exhaustive note on recombinant DNA technology and its application.
12.	Describe hybridoma technology and explain the steps involved in the production of monoclonal antibodies.
13.	Write a note on microbial transformation and application.

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