

# UKA TARSADIA UNIVERSITY

B.Pharm. (4<sup>th</sup> Semester)

Subject: 030020402-Pharmaceutical Biotechnology

Duration: 3 Hours

Max. Marks: 70

## Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

## SECTION - 1

### Q-1 (A) Do as directed.

[07]

- I) Define: Biotechnology.
- II) Explain the term: Lethal mutation.
- III) Define: Recombinant DNA technology.
- IV) Explain the term: Missense mutation.
- V) Enlist recombinant proteins produced through Recombinant DNA technology.
- VI) Explain the role of cytoplasmic F- factor in conjugation.
- VII) Enlist different methods for Protoplasts Fusion.

### Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain the difference between RNA polymerase and DNA polymerase III.
- II) Write down the difference in structure of DNA and RNA.
- III) Explain: Chargaff's rule in genetics.
- IV) Explain the role of Restriction enzymes in Recombinant DNA technology.
- V) Explain: Conjugation.
- VI) Explain: Wobble hypothesis in recognition of genetic code.

### Q-2 Answer the following.

[10]

- A) Write a note on different branches of Biotechnology.

**OR**

- A) What is mutation? Explain Frame shift mutation and Point mutation.  
B) Write in detail: Transduction in bacteria.

**OR**

- B) Write in detail: Recombinant DNA technology.

### Q-3 Answer the following in detail. (Any 2)

[10]

- A) Write in detail: Hematopoietic growth factor produced through rDNA technology.
- B) Application of Recombinant DNA technology.
- C) Write in detail: Steps for production of Monoclonal antibodies.

**SECTION - 2**

**Q-4 (A) Do as directed.**

**[07]**

- I) Define: Fermentation.
- II) Explain how  $K_m$  value is affected by enzyme immobilization.
- III) Define: Microbiological assay.
- IV) Enumerate all techniques of enzyme immobilization.
- V) Write down the full form of NCTC.
- VI) Write down the full form of ATCC.
- VII) Enlist the factor which affects enzyme kinetics in enzyme immobilization.

**Q-4 (B) Answer the following in brief. (Any 4)**

**[08]**

- I) Write down the characteristics of production strain for fermentation industry.
- II) Write down advantages of enzyme immobilization.
- III) Write the significance of secondary screening of microorganisms in fermentation industry.
- IV) Explain diffusional effects in enzyme immobilization.
- V) Explain: Crowded plate technique.
- VI) Write down merit of Microbiological assays.

**Q-5 Answer the following.**

**[10]**

- A) Write a detail note on: Structure of fermenter.

**OR**

- A) Write a detail note on: Preservation techniques for micro-organisms.
- B) Explain: Flow sheet for recovery of Streptomycin by fermentation process.

**OR**

- B) Write a detail note on: Microbiological assay of antibiotics by Two-level assay method.

**Q-6 Answer the following in detail. (Any 2)**

**[10]**

- A) Write down steps for microbiological assay of amino acids.
- B) Write in detail: Enzyme immobilization by adsorption.
- C) Write a detail note on: Pharmaceutical application of enzyme immobilization.