UKA TARSADIA UNIVERSITY

B. Pharm. (4th Semester)

Subject :030020402-Pharmaceutical Biotechnology

Time : **10 a**m to **1** pm Date : **21/05/**20**14**
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 transcription.

II) What do you understand by restriction endonucleases?

III) DNA synthesis is bidirectional. Comment.

IV) Give the expanded form of HGPRT.

V) Define 'bacteriophage'.

VI) Define 'Okazaki fragments'.

VII) What do you understand by 'phenotypic expressions'?

Q-1 (B) Answer the following in brief. (Any 4) **[08]**

I) Why is DNA replication termed 'semi-conservative' in nature?

II) Define antibodies. Differentiate between monoclonal and polyclonal antibodies.

III) Explain, in brief, the role of plasmids in bacteria.

IV) Explain, with appropriate reason, the events that take place during conjugation between an Hfr cell and F^- cell.

V) Differentiate between RNA and DNA.

VI) Enlist the applications of recombinant DNA technology.

Q-2 Answer the following. **[10]**

A) Enlist the methods of recombination in bacteria. Explain transduction process. How does a generalized transduction differ from specialized one?

OR

A) Discuss 'hybridoma technology' for the production of monoclonal antibodies. How are these monoclonal antibodies propagated?

B) Discuss the structure of DNA and explain its replication process. Name the enzymes which are involved in the replication process.

OR

B) Write a detailed note on interferons.

Q-3 Answer the following in detail. (Any 2) **[10]**

A) What is mutation? Explain frame shift mutation and point mutation. Give suitable examples in each case.

B) Define biotechnology. Describe its pharmaceutical applications.

C) What do you understand by protoplast fusion? Explain various techniques of protoplast fusion. Give their applications.

SECTION - 2

Q-4 (A) Do as directed. **[07]**

I) Define 'strain'.

II) What do you understand by microbiological assay?

III) What would you do if % potency of an unknown antibiotic solution in a two level assay is estimated to be 25% of the standard sample?

IV) Define antibiotics. Give an example.

V) What do you understand by screening of microorganisms?

VI) In one level microbiological assay, what would be the concentrations of S_1, S_2, S_3 and S_4 if the concentration of S_5 is 150 µg/ml?

VII) State the purpose of adding anti-foaming agents in a fermenter.

Q-4 (B) Answer the following in brief. (Any 4) **[08]**

I) How does enzymatic catalysis differ from catalysis by some inorganic agents?

II) Enlist the parameters which govern the selection of microorganisms for a fermentation process.

III) Explain the need of strain improvement in fermentation industry.

IV) How does immobilization of enzymes offer them more stability?

V) What do you understand by upstream and downstream processing?

VI) Differentiate between submerged growth systems and supported growth systems.

Q-5 Answer the following. **[10]**

A) Discuss the pharmacopoeial method of performing microbiological assay of Vitamin B_{12} .

OR

A) Discuss the pharmacopoeial method of performing microbiological assay of antibiotics.

B) Define enzymes? Give the mechanism of catalysis by enzymes. Discuss the factors affecting activity of immobilized enzymes.

OR

B) Enlist the techniques of enzyme immobilization. Describe adsorption procedure and name desirable characteristics of supports utilized in it.

Q-6 Answer the following in detail. (Any 2) **[10]**

A) Discuss the applications of enzyme immobilization.

B) Write a detailed note on production of penicillin through fermentation.

C) Define fermentation. Discuss key considerations in the design of a fermenter.