

P. P. SAVANI UNIVERSITY

Third Semester of M.Sc. Examination

December-2021

SSBT8070-Pharmaceutical Biotechnology

08.12.2021, Wednesday Time: 09:00 a.m. to 011:30 a.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of scientific calculator is allowed.

Section-I

Q.1 Very Short Questions (Attempt any five) [10]

- 1.1 Define Pharmaceutical Biotechnology. Give the example of biopharmaceutics.
- 1.2 Enlist different expression system available for therapeutic proteins.
- 1.3 Define genomics and proteomics?
- 1.4 What are the differences between down and upstream processing?
- 1.5 Give various ways by therapeutic proteins can be delivered.
- 1.6 What are the advantages of using plants as a expression system?

Q.2 Write Short Notes (Attempt any two) [06]

- 2.1 Give brief idea about nuclear transfer technology.
- 2.2 Brief various types of toxicity.
- 2.3 What are the advantages and disadvantages of using yeast for proteins?

Q.3 Detail questions (Attempt any two) [14]

- 3.1 What are the pros and cons using *E.coli* as an expression system?
- 3.2 Explain biopharmaceutical delivery routes.
- 3.3 How drugs can be delivered via different routes?

Section-II

- Q.1 Very Short Questions (Attempt any five) [10]**
- 1.1 What are the different cell disruption strategies for product recovery?
 - 1.2 Draw the structure of endotoxins.
 - 1.3 What are the different steps for upstream processing?
 - 1.4 Which are the different impurities can contaminate final product? Give various medical consequences due to impurities.
 - 1.5 How altered forms of the protein of interest can be removed from the product stream?
 - 1.6 Which are the methods utilized for the characterization of proteins?
- Q.2 Write Short Notes (Attempt any two) [06]**
- 2.1 Write steps of downstream processing for biopharmaceutical
 - 2.2 Which are the various purification techniques are available for therapeutic proteins? What is the principle of purification?
 - 2.3 Which are the different chromatographic techniques available for protein purification also mention their basis of separation?
- Q.3 Detail questions (Attempt any two) [14]**
- 3.1 Give an account on HPLC.
 - 3.2 Write a note on pyrogenic contaminants in final products.
 - 3.3 How SDS-PAGE is useful for the purification of proteins?