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?