Exam Date & Time: 03-May-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS- MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL BIOTECHNOLOGY)
DATE: 03/05/2018
TIME: 2:00 PM - 5:00 PM

Proteins and Protein Formulations [PBT-MPB201T]

Marks: 50 **Duration: 180 mins.**

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

1) Explain the three major forces or interactions of polypeptide that affect their stability and folding. (5)

2) Describe the principle involved in protein characterization by proteolytic cleavage. (5)

3) Enlist the common steps involved in protein purification, in the sequence they are taken up. Write the principle involved in salting-out of proteins. (5)

4) Write the principle involved in differential centrifugation and chromate-focusing techniques. (5)

5) Briefly outline the principle involved in sterility testing of a parenteral preparation. Explain the term product positive control. (5)

6) Discuss the technique of peptide mapping as a tool for analysing the protein formulations. (5)

7) How to detect viral contaminants in a finished protein formulation. Enlist and outline different viral assays employed for this purpose. (5)

8) Give a brief description on different types of concentration-response relationships in pharmacodynamics models. Give equations for the same. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

9) Write the applications of Circular Dichroism (CD) spectroscopy. (2)

A)

B) Generally, natural peptides are not suitable for use in therapeutics, if used directly. Give reasons.

C) Enlist various physical instabilities commonly found in protein formulations.

D) Pharmacological effect of a drug shows better correlation with its plasma concentration than with its dosage. Why? (2)

E) What is the definition of WHO for a biosimilar? (2)

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ate & Time: 05-May-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS- MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL BIOTECHNOLOGY)
DATE: 05/05/2018
TIME: 2:00 PM - 5:00 PM

Immunotechnology [PBT-MPB202T]

Marks: 50 **Duration: 180 mins.**

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

1) Adult bone marrow coordinates HSC development through several cell types. Elaborate. (5)

2) Enumerate anatomical barriers to infection and explain how these barriers prevent the entry of pathogens into the human body. (5)

3) Describe the mechanism involved in B cell maturation and differentiation. (5)

4) What are MHC proteins? Classify and explain their role in adaptive immune system. (5)

5) Explain the production of an attenuated viral vaccine. (5)

6) Describe the concept and applications of anti idiotype vaccines. (5)

7) Explain the mechanism involved in inflammation. (5)

8) What is meant by Autoimmunity? Explain the mechanisms proposed for induction of autoimmunity. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

9) Mention the types of Primary Lymphoid organs and their specific role. (2)

A)

B) Enlist any four important applications of monoclonal antibodies.

C) Write the differences between chimeric and human monoclonal antibodies.

D) What is Rheumatoid Arthritis? Mention the treatment regimen.

E) Explain the principle of Radioimmune assay. (2)

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ate & Time: 07-May-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS- MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL BIOTECHNOLOGY)
DATE: 07/05/2018
TIME: 2:00 PM - 5:00 PM

Bioinformatics and Computational Biotechnology [PBT-MPB203T]

Marks: 50 **Duration: 180 mins.**

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

1) List out the differences between GenBank and FASTA format of a sequence? Which format is preferred by most of the bioinformatics tools? Why? (5)

2) Discuss in detail the steps involved in progressive alignment method. What are its advantages over other methods? (5)

3) What are the different types of gap penalties? Which one do you prefer to align sequences? Why? (5)

4) Discuss in detail the different protein secondary structure prediction methods. (5)

5) What is homology modeling? Discuss in detail the steps involved in this process. (5)

6) Mr. X has given you a nucleotide sequence and requested to find if it contains any genes. What are the different approaches and tools that you would use for this purpose? (5)

7) Describe the following terms:
Guide tree and phylogenetic tree.
Bifurcating tree and multifurcating tree.
Phylogram and cladogram.
What is an outgroup? Which sequence do you consider as outgroup during phylogenetic analysis? (5)

8) Mr. Y has a protein whose structure is not known. He would like to identify small molecule inhibitors against this protein through in silico methods. You have been assigned to help him in this regard. Describe the steps that you might follow in detail. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

9) What are primary and secondary sequence databases? Give examples.

A)

B) Which PAM and BLOSUM matrices would you opt for comparing closely related sequences? Justify. (2)

C) Which representation of the protein would you choose to visualize the secondary structures? Why? (2)

D) What are bootstrapping and Jackknifing? What is their significance? (2)

E) Why Lipinski's rules are known as rule of five? What is their significance? (2)

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MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS- MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL BIOTECHNOLOGY)
DATE: 09/05/2018
TIME: 2:00 PM - 5:00 PM

Biological Evaluation of Drug Therapy [PBT-MPB204T]

Duration: 180 mins.

Marks: 50

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

1) What are pyrogens? Explain the physiological effects of pyrogens. (5)

2) Describe the protocol to construct standard curve in the assay of antibiotics by one level factorial method. (5)

3) Mention the characteristics of Screening. Explain the types of Screening (5)

4) Explain the basic approach of gene therapy and the importance of antisense approach in treatment of cancer (5)

5) Define 'similar biologic'. Explain the factors to be considered for selection of the reference biologic. (5)

6) Enumerate the studies for characterization of similar biologics and explain any one. (5)

7) Mention and explain the factors which affect drug absorption. (5)

8) Write a note on Pharmacokinetic models for biopharmaceuticals. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

9) Enlist any four properties of test organism used in microbiological assay of antibiotics. (2)

A)

B) Mention any two autoimmune disorders and the biologic medicines for the same

C) Mention the barriers for drug absorption.

D) Enumerate the competent authorities involved in the approval process for similar biologics (2)

(2)

E) Write the principle behind the production of monoclonal antibodies by hybridoma technology.

(2)

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