

B.Pharm III Year I Semester (R15) Supplementary Examinations July/August 2022
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is secondary screening of microorganism?
 - It is a routine practice to undertake strain improvement of industrial microbial culture. Give reasons.
 - In rDNA technology, what is insertional inactivation?
 - Insulin gene is isolated via total mRNA isolation, followed by conversion to cDNA. Give reasons.
 - Give examples for immune-sera preparations.
 - What is the principle involved in 'Direct ELISA'?
 - What are the applications of amylase and proteases?
 - Enlist two advantages of immobilizing microbial enzymes.
 - What is gene annotation?
 - Write any two applications of docking studies.

PART – B
(Answer all the questions: 05 X 10 = 50 Marks)

- 2 Discuss the fermentative production and recovery of streptomycin.
- OR**
- 3 (a) Explain the objectives of downstream process of microbial metabolites.
(b) Describe the production of lactic acid by fermentation.
- 4 Discuss the production of recombinant Hepatitis B vaccine.
- OR**
- 5 (a) Explain adult stem cells. How do they differ from embryonic stem cells?
(b) Enlist the applications of monoclonal antibodies.
- 6 (a) Differentiate active and passive immunization.
(b) Explain the structure of an immunoglobulin.
- OR**
- 7 Discuss the production and standardization of 'Cholera vaccine'.
- 8 (a) Explain the factors affecting the activity of enzymes.
(b) Compare the immobilization methods used for enzyme and live bacterial cells immobilization.
- OR**
- 9 Define immobilization. Classify and explain immobilization techniques.
- 10 (a) Explain protein and nucleic acid databases.
(b) Explain the advantages of using microorganisms for the production of nanoparticles.
- OR**
- 11 Write an essay on the advantages, challenges and methods used in gene therapy.

B.Pharm III Year I Semester (R15) Supplementary Examinations February 2022
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Define screening of industrial microorganisms. Classify them.
 - (b) What is downstream processing of microbial products?
 - (c) What are embryonic stem cells?
 - (d) DNA ligases are one of the important enzymes used in rDNA technology. Give reasons.
 - (e) Give two examples for vaccines containing toxoids.
 - (f) What are vaccines?
 - (g) Write the applications of streptokinase and hyaluronidase.
 - (h) Enlist the methods used in immobilization of plant cells.
 - (i) What are the applications of nanobiotechnology?
 - (j) What are biological data bases?

PART – B
(Answer all the questions: 05 X 10 = 50 Marks)

- 2 Explain the construction and working of an industrial aerobic fermenter.
- OR**
- 3 Discuss the fermentative production and recovery of penicillin.
- 4 Discuss the principle involved in production of monoclonal antibodies by hybridoma technology.
- OR**
- 5 Explain the steps involved in production and purification of humulin.
- 6 (a) Describe the structure of an antibody with a neat labelled diagram.
(b) Differentiate humoral and cell mediated immunity.
- OR**
- 7 Discuss the production and standardization of Oral Polio vaccine.
- 8 Classify different methods of immobilization. Citing suitable examples, explain the principle involved in these methods.
- OR**
- 9 (a) What are the advantages of microbial enzymes over other sources of enzymes?
(b) Describe the applications of penicillinase and streptokinase.
- 10 What is gene therapy? Classify and explain different techniques used in gene therapy.
- OR**
- 11 (a) Write short notes on applications of docking studies in drug discovery.
(b) Describe the secondary structure of proteins.

B.Pharm III Year I Semester (R15) Regular & Supplementary Examinations November/December 2019
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What are the differences between co-culture and mixed culture in fermentation technology?
 - (b) Which types of sensors are there for using in fermenter process?
 - (c) What is biolistics or gene gun?
 - (d) What is a palindrome sequence of DNA? Illustrate with a suitable example.
 - (e) Name some cytokines which released in response to virus infection and why?
 - (f) What is innate immunity and give some examples?
 - (g) What is the best way to neutralize collagenase using autologous plasma/serum?
 - (h) How to determine snailase activity? What is substrate and conditions?
 - (i) Describe the importance of medical genetics.
 - (j) Define proteomics and genomics with two examples in each.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) What are the types of fermentation and how to optimize the fermentation process?
(b) Write in details of isolation and selection procedure in screening of microorganisms.

OR

- 3 (a) What are the types, design and operation of Bioreactors?
(b) What is the selection procedure for organisms and fermentation and purification of vitamins?

UNIT – II

- 4 (a) What are the steps involved in isolation of enzymes & vectors?
(b) What are stem cells? How is it used and targeted by various medical technology?

OR

- 5 (a) Write short notes on Gene cloning.
(b) Write various uses of humatrope & activase.

UNIT – III

- 6 (a) Enumerate the difference between active & passive immunization of vaccine preparation.
(b) Write the principle of humoral immunity.

OR

- 7 (a) Write the principles of immunity and use in the medical purpose.
(b) Write the standardization of storage of BCG.

UNIT – IV

- 8 (a) Write the various factors affecting enzyme kinetics.
(b) Write short notes on advantages and disadvantages over immobility of isolated enzymes.

OR

- 9 (a) Write short notes on Hyaluronidase.
(b) Write short notes on Streptokinase.

UNIT – V

- 10 (a) Write a brief notes on application of bioinformatics.
(b) What is nanobiotechnology and its big application in recent days?

OR

- 11 (a) How do you correlate Proteomics and genomics?
(b) Write the principle and application of gene therapy.

B.Pharm III Year I Semester (R15) Supplementary Examinations February 2022
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define screening of industrial microorganisms. Classify them.
 - What is downstream processing of microbial products?
 - What are embryonic stem cells?
 - DNA ligases are one of the important enzymes used in rDNA technology. Give reasons.
 - Give two examples for vaccines containing toxoids.
 - What are vaccines?
 - Write the applications of streptokinase and hyaluronidase.
 - Enlist the methods used in immobilization of plant cells.
 - What are the applications of nanobiotechnology?
 - What are biological data bases?

PART – B
(Answer all the questions: 05 X 10 = 50 Marks)

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(b) Differentiate humoral and cell mediated immunity.
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- 10 What is gene therapy? Classify and explain different techniques used in gene therapy.
- OR**
- 11 (a) Write short notes on applications of docking studies in drug discovery.
(b) Describe the secondary structure of proteins.

B.Pharm III Year I Semester (R15) Regular & Supplementary Examinations November/December 2019
MEDICINAL CHEMISTRY – I

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Classify bioisosteres.
 - What are the various types of receptors?
 - Write the mechanism of action of Prazosin and Pralidoxime.
 - How do neuromuscular blocking agents work?
 - What is Parkinsonism?
 - Classify anxiolytics.
 - Write the advantages of tricyclic antidepressants.
 - Mention the uses of Picrotoxin and Methamphetamine.
 - What is anaesthesia? Classify general anaesthetics.
 - Write the structure and adverse effects of Propofol.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) What is biotransformation? Explain phase-II reactions in detail.
(b) Describe the theories on drug receptor interaction.
- OR**
- 3 (a) Explain the process of drug distribution and protein binding in detail.
(b) Describe the physico chemical properties related to the activity of a drug molecule.

UNIT – II

- 4 (a) Describe in detail about the biosynthesis and metabolism of adrenergic neurotransmitters.
(b) Write the synthesis, mechanism of action and uses of Ephedrine and Succinylcholine.
- OR**
- 5 (a) Classify anti-cholinergic agents. Write the structure and mechanism of action of at least one drug under each class.
(b) Write the SAR of Dicyclomine, Isoprenaline and Oxymetazoline.

UNIT – III

- 6 (a) Write the synthesis, structure, mechanism of action and uses of Phenytoin and Carbamazepine.
(b) Write the structure and SAR of Phenothiazine and Haloperidol.
- OR**
- 7 (a) Classify the anti-parkinsons drugs. Write the synthesis and SAR of Levodopa, Amantadine.
(b) Write a note on the synthesis and mechanism of action of Clozapine.

UNIT – IV

- 8 (a) What is depression? Classify antidepressants. Write the synthesis of any two antidepressants.
(b) Explain about the structure and synthesis of Fluoxetine.
- OR**
- 9 (a) Write a note on SAR of Imipramine.
(b) Mention the structure, synthesis and uses of Caffeine, Theophylline.

UNIT – V

- 10 (a) Describe the structure, SAR and mechanism of action of Thiopental sodium.
(b) Classify local anaesthetics. Write a note on synthesis and uses of lignocaine.
- OR**
- 11 (a) Mention a note on SAR of local anesthetics containing amide group.
(b) Write a note on Meyer- Overton theory. Give few examples of inhaled and injectable anesthetics.

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B.Pharm III Year I Semester (R15) Supplementary Examinations June/July 2019
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What are baffles?
 - (b) Write auxography method.
 - (c) List application on stem cells.
 - (d) What is Hybridoma technology?
 - (e) Mention any two difference between humoral and cell mediated immunity.
 - (f) Define polyvalent vaccines.
 - (g) Define immobilization.
 - (h) List out the factors affecting the action of enzyme.
 - (i) What is gene library?
 - (j) Write database about the design and operation of industrial fermenter.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Discuss about the design and operation of industrial fermenter.

OR

- 3 Describe the production of Penicillin and lactic acid.

UNIT – II

- 4 Describe in detail about the production, purification and applications of monoclonal antibodies.

OR

- 5 Write a detailed note on the production of humulin and introns.

UNIT – III

- 6 Explain in brief about the preparation and storage of tetanus toxoid.

OR

- 7 Describe the official preparation used for inducing passive immunity.

UNIT – IV

- 8 Describe immobilization. Write note on the different methods of immobilization techniques.

OR

- 9 Explain the method of production and purification of penicillinase enzyme.

UNIT – V

- 10 What is gene therapy? Discuss the detail note on the gene therapy.

OR

- 11 Describe the application of bioinformatics in pharmaceutical industries.

B.Pharm III Year II Semester (R15) Regular & Supplementary Examinations September 2021
BIOPHARMACEUTICS & PHARMACOKINETICS

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What do you understand by sink condition?
 - Drug protein binding prolong the plasma elimination half-life of drugs explain.
 - Explain the term biotransformation and detoxification.
 - List the non-renal routes of drug excretion.
 - Define the term bioavailability.
 - What is the difference between chemical equivalence and pharmaceutical equivalence?
 - What do you mean by compartment modeling?
 - Define the term AUC.
 - 'Nonlinear pharmacokinetics is otherwise called as saturation pharmacokinetics' - Justify.
 - Write Michaelis-Menten equation and explain the terms.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Explain the pH partition hypothesis in drug absorption. How does the altered gastric pH influence the absorption of acidic and basic drugs?

OR

- 3 Describe the role of physiologic barriers for distribution of drugs in the body.

UNIT – II

- 4 Describe the metabolism of drugs by phase-I biotransformation reaction.

OR

- 5 Describe the mechanisms involved in the renal excretion of drugs with suitable example.

UNIT – III

- 6 (a) Describe about crossover study design in bioequivalence studies.
(b) Describe how bioavailability is measured from blood and urine data.

OR

- 7 (a) Describe about BIBD in bioequivalence studies.
(b) What are the objectives of bioavailability studies? Add a short note on selection of human volunteers in bioequivalence study.

UNIT – IV

- 8 Find out the various pharmacokinetic parameters following one-compartment open zero order IV infusion administration.

OR

- 9 List the advantages and criteria for obtaining valid urinary excretion data. Describe how elimination and excretion rate constant can be found out using above data.

UNIT – V

- 10 Explain saturation kinetics with cause, implications, characteristics and examples in non-linear kinetics.

OR

- 11 Describe one method each for the determination of K_m and V_m in-vitro and in patient.

B.Pharm III Year I Semester (R15) Supplementary Examinations August 2021
PHARMACEUTICAL BIOTECHNOLOGY

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is primary screening? Give an example.
 - Give any two reasons for performing strain improvement of industrial microbial culture.
 - In rDNA technology, the vectors and the gene of interest are restricted using same restriction enzyme. Give reasons.
 - What is the strategy used for isolation of insulin gene in rDNA production of humulin?
 - What are immune-sera preparations?
 - ELISA technique is frequently used for diagnostic test. Briefly explain the principle involved in 'Sandwich ELISA'.
 - What are the applications of penicillinase and streptodornase?
 - Enlist two advantages of immobilizing plant cells.
 - What is biological sequence analysis?
 - What are the applications of docking studies?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Discuss the fermentative production and recovery of penicillin.

OR

- 3 (a) What are the objectives and methods used in downstream process of microbial metabolites?
(b) Alcohol fermentation is a classic example for aerobic and anaerobic fermentation. Explain.

UNIT – II

- 4 Discuss the production of recombinant Hepatitis B vaccine by recombinant DNA technology.

OR

- 5 (a) Explain the applications of stem cells.
(b) Briefly explain the principle involved in production of monoclonal antibodies by hybridoma technology.

UNIT – III

- 6 (a) Differentiate active and passive immunization.
(b) Explain the types of antigen-antibody reactions.

OR

- 7 Discuss the production and standardization of 'Oral Polio Vaccine'.

UNIT – IV

- 8 (a) Explain the factors affecting the stability of enzymes.
(b) Differentiate the methods involved in immobilization of enzyme and live bacterial cells.

OR

- 9 Citing suitable examples, explain different methods used in immobilization of enzymes.

UNIT – V

- 10 (a) Write short notes on protein and nucleic acid databases.
(b) Explain the applications of microorganisms in production of nanoparticles.

OR

- 11 What is gene therapy? Explain the advantages, challenges and methods used in gene therapy.

B.Pharm III Year I Semester (R15) Supplementary Examinations August 2021
APPLICATION OF SPECTROSCOPIC METHODS IN MOLECULAR STRUCTURE DETERMINATION

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- A solution of 0.5 MNaOH is observed no peak in UV region 200nm-400nm by UV spectrophotometer. Explain.
 - Write about various electronic transitions in organic molecules.
 - Write the principle of electrophoresis.
 - Write the principle involved in capillary electrophoresis.
 - What is harmor frequency and free induction decay in NMR spectroscopy?
 - What is the Larmor frequency?
 - Write the principle of mass spectrometry.
 - Write the difference between Fermi resonance and overtone in IR spectra.
 - Write any two applications of bioassay.
 - Write the significance of ELISA test.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Explain Beer's-Lambert's law. Write a note on the solvents used in UV-Vis spectroscopy.
(b) What happens on absorption of UV or IR radiation by a molecule?

OR

- 3 (a) Write a note on chromophore and auxochrome concept.
(b) Write a note on different types of shifts taking place in UV spectroscopy.

UNIT – II

- 4 (a) Discuss the factors influencing the electrophoretic conditions.
(b) Write the principle, instrumentation and applications of gel electrophoresis.

OR

- 5 (a) Write a note on different types of electrophoresis.
(b) Explain the applications of electrophoresis in analyzing the macromolecules.

UNIT – III

- 6 (a) Write a note on the principle of C^{13} NMR spectroscopy.
(b) Write a note on spin-spin splitting pattern.

OR

- 7 (a) Discuss the importance of coupling constant in structure elucidation.
(b) Explain chemical shift and its significance.

UNIT – IV

- 8 (a) Write a note on MALDI technique in mass spectrometry.
(b) Give a brief account on McLafferty rearrangement.

OR

- 9 (a) Describe the sample handling techniques in IR spectroscopy.
(b) Write about various ionization techniques in mass spectrometry.

UNIT – V

- 10 (a) Write a note on modern approaches in bioanalytical techniques.
(b) Explain with suitable example on the role UV spectroscopy in bioanalysis.

OR

- 11 Discuss in detail about Bioassay.
