Code: BP303T

R19

B.Pharm II Year I Semester (R19) Regular Examinations March 2023

PHARMACEUTICAL MICROBIOLOGY

(For 2021 regular & 2022 lateral entry admitted batches only)

Time: 3 hours Max. Marks: 75

PART – A

(Compulsory Question)

*****

1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	Differentiate between log phase and decline phase.	2M
	(b)	Mention reagents used for acid fast staining.	2M
	(c)	Write applications of UV radiations.	2M
	(d)	Explain the advantages of autoclaving over hot air sterilization.	2M
	(e)	Write the significance of positive control in sterility testing.	2M
	(f)	Write the ideal properties of disinfectant.	2M
	(g)	How will you validate HEPA filter?	2M
	(h)	Classify clean area according to British standard.	2M
	(i)	Mention any four major requirements for cell culture laboratory.	2M
	(j)	What is secondary cell culture?	2M

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2	(a)	Describe bacterial growth curve. Add a note on physical factors affecting growth of bacteria.	6M
	(b)	Write a note on raw materials used for preparation of culture media.	4M
3	(a)	Explain different methods for evaluation of bacteriostatic disinfectant.	5M
	(b)	Describe steps involved in replication of virus.	5M
4	(a)	Explain the principle, procedure, applications and demerits of sterilization using autoclave.	6M
	(b)	Write the procedure, merits and demerits of membrane filtration.	4M

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5	(a)	Explain any two biochemical tests used for identification of bacteria.	2M
	(b)	Write a note cultivation of anaerobic on bacteria.	3M
6		Write the procedure, merits and demerits of ethylene oxide sterilization.	5M
7	(a)	Write classification, mechanism of action and uses of aldehyde disinfectants.	3M
	(b)	Discuss about merits and demerits of viral cultivation techniques.	2M
8	(a)	Explain principles involved in microbiological assay of vitamin B12.	3M
	(b)	Write in detail about the construction of aseptic room.	2M

Contd. in page 2

9	(a)	Explain different factors affecting microbial spoilage of Pharmaceuticals.	3M
	(b)	Write the incubation conditions for cell culture.	2M
10	(a)	Describe any two methods of viability counting.	3M
	(b)	Write about importance of microbial preservation technique.	2M
11	(a)	Explain principles involved in sterilisation by filtration.	3M
	(b)	Mention indicators used for various sterilization methods.	2M
12	(a)	Explain principles involved in microbiological assay of streptomycin.	3M
	(b)	Write note on Grade B room.	2M
13	(a)	Explain the different sources and types of microbial contamination of pharmaceuticals.	3M
	(b)	Mention the media used in cell culture.	2M

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Code: BP303T

R19

B.Pharm II Year I Semester (R19) Supplementary Examinations August 2021

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Define pure culture.
(b) Write the difference between Prokaryotes and Eukaryotes.
(c) Define sterilization cycle.
(d) Give the principle involved in gram staining technique.
(e) Write the difference between Bactericidal & Bacteriostatic.
(f) Define antiseptic and disinfectant.
(g) Define MIC.
(h) Write the sources of contamination in aseptic area.
(i) Define transformed culture.
(j) Define preservative.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) Explain the different methods of isolation of bacteria.
(b) Discuss the design, mechanism, operation and applications of hot air oven.

3 (a) Discuss the reproductive mechanisms in fungi.
(b) Discuss the microbiological assay of Streptomycin.

4 (a) Write a note on applications of cell cultures in pharmaceutical industry and research.
(b) Define & classify viruses. Explain the replication of viruses.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 (a) Write a note on antibiotic sensitivity test.
(b) Write the difference between gram positive & gram negative bacteria.

6 Explain the principle involved in Methyl orange & Indole tests.

7 Write the principle and procedure involved in acid-fast staining.

8 (a) Write a note on chemical indicators used in validation of sterilization process.
(b) Write the microbiological assay of Riboflavin.

9 Discuss the microbiological assay of Lysine.

10 Explain the factors affecting microbial spoilage of pharmaceutical products.

11 Write a short note on gradient plate method.

12 (a) Write the mode of action of Halogens & Iodine as disinfectants.
(b) Differentiate between Exotoxins & Endotoxins.

13 (a) Write a note on assessment of microbial contamination and spoilage.
(b) Differentiate between dark field microscopy & phase contrast microscopy.

*****

Code: BP303T

R19

B.Pharm II Year I Semester (R19) Supplementary Examinations September 2022

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are eukaryotes? Give examples.
(b) What are anaerobic bacteria? Give examples.
(c) Explain acid-fast staining.
(d) Define disinfection and sterilization.
(e) Draw a neat labelled diagram of bacteriophage.
(f) Mention the six phases of viral multiplication.
(g) Define microbiological assay. What is the importance of it?
(h) What is guthrie test?
(i) Explain direct inoculation method for testing the sterility.
(j) Write a note on applications of cell cultures in pharmaceutical industry.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) Define microscopy. What are the different types of microscopes? Explain in detail about electron microscope.
(b) Explain different staining techniques for identification of bacteria.

3 (a) Classify disinfectants. Explain factors affecting disinfection.
(b) Explain sterility testing of ophthalmic products, as per Indian pharmacopoeia.

4 (a) Explain construction and working of laminar air flow equipment.
(b) Explain the procedure for assessment of microbial contamination and spoilage.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 Explain different methods of isolating pure cultures.

6 Explain in detail quantitative measurement of bacterial growth.

7 (a) Explain physical methods of sterilization.
(b) Explain chemical methods of sterilization.

8 Write a note on sterilization process by autoclave and hot air oven.

9 Explain properties and mechanism of action of disinfectants.

10 (a) Explain viral replication.
(b) Draw the flow diagram of aseptic area.

11 Write a note on different sources of contamination in aseptic area.

12 Explain standardization of calcium pantothenate.

13 Explain primary, established and transformed cell cultures.

*****

Code: BP303T

R19

B.Pharm II Year I Semester (R19) Regular & Supplementary Examinations April 2022

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are prokaryotes? Give examples.
(b) Draw a neat labelled diagram of bacteria.
(c) Explain "IMVic" test.
(d) Define disinfection and sterilization.
(e) What is bacteriostatic and bacteriocidal action? Explain with examples.
(f) Classify fungi.
(g) Explain the merits of microbiological assay.
(h) Draw the flow diagram of aseptic room.
(i) Explain membrane filtration method for testing the sterility.
(j) Write a note on applications of cell culture in pharmaceutical industry.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) Explain short term and long term preservation methods for pure culture.
(b) What is bacterial growth curve? Explain the factors affecting growth of bacteria.

3 (a) Explain different methods of sterilization.
(b) Explain mechanism of action of disinfectants.

4 (a) Explain different types of laminar air flow hood.
(b) Explain different types of microbial spoilage in pharmaceutical products.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 Explain morphological classification of bacteria.

6 Explain in detail quantitative measurement of bacterial growth.

7 Write a note on different staining techniques for identification of bacteria.

8 Define sterilization indicators. Explain its types.

9 Explain sterility testing of liquid products, as per Indian pharmacopoeia.

10 (a) Explain Chick Martin test.
(b) Explain Rideal-Walker coefficient test.

11 (a) Write a note on different sources of contamination in an Aseptic area.
(b) Classify classes of clean room with their properties.

12 Explain microbiological assay of antibiotics by Cup-Plate and Tube Assay method.

13 (a) Write a note on evaluation of microbial stability of formulations.
(b) Classify different types of culture media.

*****

Code: BP303T

R19

B.Pharm II Year I Semester (R19) Supplementary Examinations August 2021

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Define pure culture.
(b) Write the difference between Prokaryotes and Eukaryotes.
(c) Define sterilization cycle.
(d) Give the principle involved in gram staining technique.
(e) Write the difference between Bactericidal & Bacteriostatic.
(f) Define antiseptic and disinfectant.
(g) Define MIC.
(h) Write the sources of contamination in aseptic area.
(i) Define transformed culture.
(j) Define preservative.

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

2 (a) Explain the different methods of isolation of bacteria.
(b) Discuss the design, mechanism, operation and applications of hot air oven.

3 (a) Discuss the reproductive mechanisms in fungi.
(b) Discuss the microbiological assay of Streptomycin.

4 (a) Write a note on applications of cell cultures in pharmaceutical industry and research.
(b) Define & classify viruses. Explain the replication of viruses.

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

5 (a) Write a note on antibiotic sensitivity test.
(b) Write the difference between gram positive & gram negative bacteria.

6 Explain the principle involved in Methyl orange & Indole tests.

7 Write the principle and procedure involved in acid-fast staining.

8 (a) Write a note on chemical indicators used in validation of sterilization process.
(b) Write the microbiological assay of Riboflavin.

9 Discuss the microbiological assay of Lysine.

10 Explain the factors affecting microbial spoilage of pharmaceutical products.

11 Write a short note on gradient plate method.

12 (a) Write the mode of action of Halogens & Iodine as disinfectants.
(b) Differentiate between Exotoxins & Endotoxins.

13 (a) Write a note on assessment of microbial contamination and spoilage.
(b) Differentiate between dark field microscopy & phase contrast microscopy.

*****

Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations April 2022

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Write the classification of bacteria based on temperature.
(b) Give examples each of fungicidal and virucidal agents.
(c) Write short notes on growth curve.
(d) Write the use of culture media.
(e) What are the media used for sterility test?
(f) What is moist heat sterilization?
(g) Write diagnostic test for TB, Leprosy.
(h) What is etiology?
(i) What is the use of microbial assay?
(j) Define bio-sensors.

PART – B

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

2 (a) Explain briefly about the structures internal to bacterial cell wall with diagram.
(b) Discuss about classification of fungi.

OR

3 (a) Write about the generation theory.
(b) Explain about viable count of bacteria.

4 Explain the nutritional requirements and physical conditions required for bacterial growth.

OR

5 Write the cultivation method of anaerobes.

6 Write in detail about the importance of sterilization indicators used for the evaluation of the efficiency of sterilization methods.

OR

7 (a) Write about various types of disinfectants.
(b) Write about the factors affecting the disinfection.

8 What is immunization? Write the types of immunization methods.

OR

9 Write the diagnostic tests for malaria, typhoid, cholera.

10 Write in detail about microbiological assay of antibiotics.

OR

11 Write the principle and method involved in microbial assay of streptomycin.

*****

Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations April 2022

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Write the classification of bacteria based on temperature.
(b) Give examples each of fungicidal and virucidal agents.
(c) Write short notes on growth curve.
(d) Write the use of culture media.
(e) What are the media used for sterility test?
(f) What is moist heat sterilization?
(g) Write diagnostic test for TB, Leprosy.
(h) What is etiology?
(i) What is the use of microbial assay?
(j) Define bio-sensors.

PART – B

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

2 (a) Explain briefly about the structures internal to bacterial cell wall with diagram.
(b) Discuss about classification of fungi.

OR

3 (a) Write about the generation theory.
(b) Explain about viable count of bacteria.

4 Explain the nutritional requirements and physical conditions required for bacterial growth.

OR

5 Write the cultivation method of anaerobes.

6 Write in detail about the importance of sterilization indicators used for the evaluation of the efficiency of sterilization methods.

OR

7 (a) Write about various types of disinfectants.
(b) Write about the factors affecting the disinfection.

8 What is immunization? Write the types of immunization methods.

OR

9 Write the diagnostic tests for malaria, typhoid, cholera.

10 Write in detail about microbiological assay of antibiotics.

OR

11 Write the principle and method involved in microbial assay of streptomycin.

*****

Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations August 2021

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Define flagella. List out different types of flagella.
(b) Write the contributions of Koch.
(c) Write synchronous growth of bacteria.
(d) Write complex media.
(e) Define D-value & Z-value.
(f) Write the difference between disinfection and antiseptic.
(g) Give the principle involved in Widal test.
(h) Write the principle involved in Schick test.
(i) Name the microorganism used in microbiological assay of tetracycline.
(j) Write the principle involved in microbiological assay of amino acids.

PART – B

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

UNIT – I

2 (a) Write the difference between prokaryotes and eukaryotes.
(b) Write a note on replication of virus.

OR

3 (a) Write the principle and procedure in gram staining technique.
(b) Draw the ultra structure of bacteria and explain different organelles.

UNIT – II

4 (a) Explain the different stages of bacterial growth curve with a neat diagram.
(b) Mention the different methods involved in the Isolation of bacteria.

OR

5 (a) Mention the different methods involved in the preservation of bacteria. Explain any two methods.
(b) Discuss the role of different components used in nutritional media.

UNIT – III

6 Write the principle, procedure, construction, merits, demerits and applications of hot air oven.

OR

7 (a) Write a note on filtration sterilization.
(b) Describe Rideal Walker test. List out the merits and demerits of the test.

UNIT – IV

8 (a) Write the causative organism, mode of transmission, diagnosis of Leprosy & TB.
(b) Write the source, mode of transmission, control of Bacillus dysentery and Hepatitis.

OR

9 (a) Write the causative organism, mode of transmission, control of any two sexually transmitted diseases.
(b) Write the causative organism, mode of transmission, diagnosis malaria & cholera.

UNIT – V

10 (a) Write the applications of biosensors in analysis.
(b) Write the microbiological assay of streptomycin.

OR

11 (a) Write the microbiological assay of vitamin B12.
(b) Write a note on production of interferon by genetic engineering.

*****

Code: 15A01101

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations October 2020

ENVIRONMENTAL STUDIES

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are bioresources?
(b) What is difference between deforestation, afforestation and reforestation?
(c) Define species richness.
(d) What is the difference between endangered and critically endangered species?
(e) Give the name of diseases caused by accumulation of any two heavy metals.
(f) What are the differences between biodegradable and non-biodegradable pollutants?
(g) What is photochemical smog?
(h) The wildlife protection and forest conservation act were enacted in which years?
(i) What is the family welfare program?
(j) What do you mean by population growth?

PART – B

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

UNIT – I

2 Define natural resources. Classify different types of natural resources. Describe in brief.

OR

3 Discuss the problems associated with food resources.

UNIT – II

4 (a) Explain the structure and function of forest ecosystem.
(b) Write a short note on energy flow.

OR

5 (a) What is the concept of biodiversity? How biodiversity is important for human being?
(b) What are the main characteristic features of national parks, sanctuaries and biosphere reserves?

UNIT – III

6 Define water pollution and water pollutant? Describe the different sources and effect of water pollution.

OR

7 Write short note on
(a) Sources and effect of air pollutants NOx and Sox.
(b) Source and effect of noise pollution.

UNIT – IV

8 What is acid rain? What is the source of acid rain? What is the impact of acid rain on environment?

OR

9 Write a short note on
(a) Green house gases and its effect on climate changes.
(b) Chemistry of ozone layer formation and depletion.

UNIT – V

10 Write a short note on
(a) Human population and environment.
(b) Women and child welfare.

OR

11 Write a short note on
(a) Population explosion causes and its effect.
(b) Environment and human health.

*****

Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations October 2020

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are gram negative and positive bacteria?
(b) What is microbiology and write its importance in pharmacy?
(c) Differentiate between aerobic & anaerobic microorganisms.
(d) What are thermophilic organisms?
(e) Define sterilization and disinfection.
(f) What is pasteurization?
(g) Write preventive measures for food poisoning.
(h) Draw the structure of antibody and explain it.
(i) Give six applications of various microbes in pharmaceutical industries.
(j) What are microbiological assays?

PART – B

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

UNIT – I

2 (a) Explain how characterization and identification of microorganisms are performed.
(b) Write the contributions of Antonie van Leeuwenhoek and Pasteur.

OR

3 (a) What is spontaneous generations theory? Explain in detail.
(b) Explain the pharmaceutical significance of protozoa.

UNIT – II

4 (a) Explain the bacterial growth curve.
(b) What are nutritional requirements and types of nutrient media and growth conditions required for microbial growth?

OR

5 (a) Write a detail note on preservation of microorganisms.
(b) Explain exponential growth and generation time.

UNIT – III

6 (a) Classify disinfectant based on their mechanism of action.
(b) What are various physical methods of sterilization and describe any one of them?

OR

7 (a) What properties an ideal antiseptic or disinfectant should have?
(b) What are the various chemical methods of sterilization? Describe any one in detail.

Contd. in page 2

UNIT – IV

8 (a) Write diagnosis, source of infection, mode of transmission, immunization methods, prevention and control of typhoid and tetanus.

(b) Write diagnosis tests for cholera and tuberculosis in detail.

OR

9 (a) Write diagnosis, source of infection, mode of transmission, immunization methods, prevention and control of bacillary dysentery and gonorrhoea.

(b) Write diagnosis tests for Malaria and Typhoid in detail.

UNIT – V

10 (a) Write principles and methods involved in tetracyclines antibiotic.

(b) Write microbial source & applications of various antibiotics used in pharmaceutical industry.

OR

11 (a) Write principles and methods involved in streptomycin antibiotic.

(b) Write microbial source & applications of various vitamins used in pharmaceutical industry.

*****

Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations June 2019

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Mention any two contributions of Pasteur.
(b) Enlist Koch's postulates.
(c) What is the difference between autotrophs and auxotrophs?
(d) With suitable examples mention the difference between a selective media and a differential media.
(e) Mention the importance of positive and negative control tubes in sterility testing.
(f) Enlist any four mechanisms of antimicrobial resistance.
(g) Write a short note on DOTS.
(h) What is the use of Mantoux test? How it is performed?
(i) What is the test organism used in the microbiological assay of cyanocobalamin? Explain the principle involved in this assay.
(j) With specific examples, enlist four different antibiotics and their sources.

PART – B

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

UNIT – I

2 Briefly discuss the theories of staining. With a suitable example, explain the principle involved in any one differential staining of bacteria.

OR

3 Outline the principle involved in the IMViC reactions.

UNIT – II

4 Enlist the methods of enumeration of bacteria. Briefly discuss a method determination of viable count.

OR

5 With a neat labeled diagram, explain the different phases of a normal bacterial growth curve. Discuss the methods of long-term and short-term preservation of microorganism.

UNIT – III

6 Define disinfection and enlist the properties of an ideal disinfecting agent. Explain any two properties in detail.

OR

7 Discuss sterilization by ionizing radiation as under: theories, applications, advantages and disadvantages of this method.

UNIT – IV

8 Outline the etiology, causative organism, mode of transmission, diagnosis, prevention and control of tetanus.

OR

9 Outline the etiology, causative organism, mode of transmission, diagnosis, prevention and control of TB.

UNIT – V

10 Citing a suitable example, describe the production of a human protein using recombinant DNA technology.

OR

11 Discuss the microbiological assay of riboflavin.

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Code: 15R00304

R15

B.Pharm II Year I Semester (R15) Supplementary Examinations June 2019

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Mention any two contributions of Pasteur.
(b) Enlist Koch's postulates.
(c) What is the difference between autotrophs and auxotrophs?
(d) With suitable examples mention the difference between a selective media and a differential media.
(e) Mention the importance of positive and negative control tubes in sterility testing.
(f) Enlist any four mechanisms of antimicrobial resistance.
(g) Write a short note on DOTS.
(h) What is the use of Mantoux test? How it is performed?
(i) What is the test organism used in the microbiological assay of cyanocobalamin? Explain the principle involved in this assay.
(j) With specific examples, enlist four different antibiotics and their sources.

PART – B

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

UNIT – I

2 Briefly discuss the theories of staining. With a suitable example, explain the principle involved in any one differential staining of bacteria.

OR

3 Outline the principle involved in the IMViC reactions.

UNIT – II

4 Enlist the methods of enumeration of bacteria. Briefly discuss a method determination of viable count.

OR

5 With a neat labeled diagram, explain the different phases of a normal bacterial growth curve. Discuss the methods of long-term and short-term preservation of microorganism.

UNIT – III

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UNIT – IV

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OR

9 Outline the etiology, causative organism, mode of transmission, diagnosis, prevention and control of TB.

UNIT – V

10 Citing a suitable example, describe the production of a human protein using recombinant DNA technology.

OR

11 Discuss the microbiological assay of riboflavin.

*****

Code: 15R00304

R15

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

PHARMACEUTICAL MICROBIOLOGY

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) Differentiate between prokaryotes and eukaryotes.
(b) Write pharmaceutical significance of bacteria.
(c) What are chemotrophs organisms?
(d) Write short note on exponential growth curve.
(e) Write applications of sterilization.
(f) What are chemotherapeutic agents? Give two examples.
(g) Defined term etiology.
(h) What are active and passive immunization?
(i) What are microbiological assays?
(j) What are genetic engineered products? Give two examples.

PART – B

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

UNIT – I

2 (a) Explain in detail the structure of eukaryotic and prokaryotic cell.
(b) Write about the three domains of micro organism life.

OR

3 (a) Explain the pharmaceutical significance of algae.
(b) Write the contributions of Pasteur in microbiology.

UNIT – II

4 (a) What are chemostat and turbidostat? Give examples.
(b) Explain exponential growth and generation time.

OR

5 (a) Describe the isolation and cultivation of aerobic & anaerobic microorganisms.
(b) Describe bacterial growth pattern.

UNIT – III

6 (a) Classify the various methods of sterilization with proper examples.
(b) Explain heat sterilization in detail.

OR

7 (a) Explain various official methods of sterility testing of pharmaceuticals and bio-safety measures.
(b) Write different methods of testing of disinfectants.

UNIT – IV

8 (a) Write diagnosis, source of infection, mode of transmission, immunization methods, prevention and control of diphtheria and tuberculosis
(b) Write diagnosis tests for leprosy and tuberculosis in detail

OR

9 (a) Write diagnosis, source of infection, mode of transmission, immunization methods, prevention and control of leprosy and cholera.
(b) Write diagnosis tests for cholera and malaria in detail

UNIT – V

10 (a) Write principles and methods involved in penicillins antibiotic.
(b) Write microbial source & applications of various genetic engineered products used in pharmaceutical industry.

OR

11 (a) Write principles and methods involved in tetracyclines antibiotic.
(b) Write microbial source & applications of various enzymes used in pharmaceutical industry.

*****