

**Time : Three Hours**

**Maximum : 75 Marks**

**SECTION – A**  
**Answer any FIVE Questions**

**5x10 = 50 M**

1. a) Describe Microbiology? What are various branches of microbiology and add a note on their significance?  
b) Discuss in detail about different phases of bacterial growth?
2. Discuss about ultrastructure of Bacterial cell with the help of neat labeled diagram?
3. Discuss the following
  - a) Gram staining technique & its applications?
  - b) Gases used for sterilization?
  - c) Factors that affect bacterial growth.
4. a) Explain about Large scale equipment used for sterilisation?  
b) Give a note on sterility indicators.
5. What are factors affecting the microbial spoilage of pharmaceutical products.
6. Discuss the Principle and methods involved in microbiological assay of amino acids.
7. Write the following:
  - a) Cell cultures.
  - b) Transformed cultures.

**SECTION – B**

**Answer any FIVE Questions**

**5x5 = 25 M**

8. Discuss the method for isolation of bacteria?
9. Write merits & demerits of chemical sterilisation?
10. Give a brief note on cultivation of viruses.
11. What is the significance of laminar air flow equipment in designing of aseptic area.
12. Discuss the methods of staining of bacteria.
13. Explain about bacteria growth curve.
14. Mention applications of cell cultures in pharmaceutical industry?

Total No. of Questions : 14 ]

**BP 303 T**

[ Total No.of Pages : 02

**II/IV B. PHARMACY (REGULAR) DEGREE EXAMINATIONS,**

**JUNE / JULY -2022**

**Third Semester**

**PHARMACEUTICAL MICROBIOLOGY - THEORY**

**Time : Three Hours**

**Maximum : 75 Marks**

**SECTION - A**

**Answer any FIVE Questions.**

**5x10 = 50 M**

1. a) How do you classify bacteria based on their morphology.  
b) Differentiate between prokaryotes and Eukaryotes.
2. a) Explain the raw materials used for culture media.  
b) Give a brief note on bacterial growth.
3. a) Explain the principle and procedure of Gram staining.  
b) Merits and demerits of chemical method of sterilization.
4. Write the principle and procedure for the microbiological assay of Vitamins.
5. a) Write a brief note on dark field microscopy.  
b) Factors influencing disinfection.
6. Discuss the source of contamination in an aseptic area. Add a note on Designing of aseptic area and laminar air flow equipment.
7. Discuss the procedure for following :
  - a) Evolution of microbial stability of formulations.
  - b) Primary cultures.
  - c) Transformed cultures.
  - d) Types of spoilage.

**SECTION - B**

**Answer any FIVE Questions.**

**5x5 = 25 M**

8. Define microscopy ? Add a note on different microscopic techniques used in the field of microbiology.

**P.T.O.**

9. Write a short notes on Gaseous Sterilization.
10. Explain the factors affecting the microbial spoilage of pharmaceutical products.
11. Write the nutritional requirements for the growth of bacteria.
12. Give a brief note on sterility indicators.
13. Write the principle, procedure and media used in test for sterility for an oily injections as per IP.
14. Explain about Application of Cell Cultures in pharmaceutical industry.



## II/IV B.PHARMACY (Regular) DEGREE EXAMINATIONS, DEC-2019/JAN-2020

## Third Semester

## B.PHARMACY

## PHARMACEUTICAL MICROBIOLOGY-Theory

Time: Three Hours

Maximum marks:75

## SECTION-A

Answer any FIVE Questions

5X10=50M

1. Write classification of Microbial cells? Explain the functions of organelles of Prokaryotic cell and Eukaryotic cell with a neat sketch.
2. Explain the Microbiological assay method for Vitamins of your choice [any two]
3. Classify the sterilisation methods? Write the Principles, Procedures and applications of gaseous and radiation sterilisation methods?
4. Write a note on following
  - i) Replication of Viruses.
  - ii) Classification of Fungi.
5. Discuss the following
  - i) Method for Evaluation of Bactericidal agent
  - ii) Classify sources of contamination.
6. Describe the factors affecting the Microbial Spoilage of Pharmaceutical Products? Add a note on methods to assess Microbial Spoilage?
7.
  - a) Discuss the procedure for cell culture and growth of animal cells in cultures?
  - b) Classify Microbial contaminants?

## SECTION-B

Answer any FIVE Questions

5X5=25M

8. Explain sterility testing method for liquid products?

9. Explain Gram staining technique for identification of bacterial in laboratory?
10. What is clean air system and write its importance.
11. Write the sterilisation process and mention equipments used in large scale?
12. Enumerate the types of disinfectants based on their mechanism of action with example?
13. Write the difference between established cell culture and transfer cell culture?
14. Write a note on preservation of pharmaceutical products using Antimicrobial agents?



II/IV B.PHARMACY (Supply) DEGREE EXAMINATIONS, AUGUST-2019

3<sup>rd</sup> Semester

B.Pharmacy

PHARMACEUTICAL MICROBIOLOGY

Time: Three Hours

Maximum marks:70

SECTION-A

Answer any Four Questions.

4X10=40M

1. Explain the process of transformation in bacteria. Describe in detail about the lytic cycle in replication of viruses.
2. Explain in detail about the bacterial growth curve with the help of the graphical representation.
3. Write in detail about the bacteriological examination of water for coliform (*E.coli*) bacteria.
4. Explain the terms 'sterilization' and 'antiseptic'. Describe any one method in detail used to evaluate the effectiveness of the bactericide.
5. Differentiate between antigen and antibody. Describe in detail about the structure of an antibody. Add note on reservoirs.
6. Write the etiology, diagnosis, source of infection, mode of transmission, prevalence and control of the following diseases.  
i) Tetanus                      ii) AIDS

SECTION-B

Answer any Ten Questions.

10X3=30M

7. Explain the structure of virus with help of a neat diagram.
8. Mention four mutagenic agents and write any one agent mechanism of action.
9. Mention various methods used for isolation of pure culture.

P.T.O

10. Write notes on morphology of actinomycetes.
11. Differentiate between simple and differential staining.
12. Write the mechanism of action and conditions applied of UV radiation in controlling the bacterial growth.
13. Write the merits and demerits of sterilization by radiation.
14. Write the applications of ELISA.
15. Write notes on active immunization
16. Differentiate between moist heat sterilization and sterilization by filtration
17. Write notes on leprosy with respect to source of infection, mode of transmission and control.
18. Write notes on amoebiasis with respect to source of infection, mode of transmission and control.



**II/IV B.PHARMACY (Supple) DEGREE EXAMINATIONS, JUNE-2018**

**Third Semester**

**PHARMACEUTICAL MICROBIOLOGY**

**Time: Three Hours**

**Maximum marks:70**

**SECTION-A**

**Answer any FOUR Questions**

**4X10=40M**

1. Write about the following
  - a) Bacterial conjugation
  - b) Actinomycetes
2. Describe in detail about the procedure of microbial examination of water with respect to coil form bacteria.
3. Write in brief about the following:
  - a) Principle and procedure of spore staining
  - b) Effect of ultrasonic waves on bacterial growth.
4. Describe any one method in detail to evaluate the disinfectant activity of a compound.
5. Write the principle and applications of the following serological reactions.
  - a) Neutralization
  - b) Opsonization
  - c) Agglutination
6. Write about the etiology, source of infection, mode of transmission, prevention and control of the following diseases:
  - a) Bacillary dysentery
  - b) Rabies

**SECTION-B**

**Answer any TEN Questions**

**10X3=30M**

7. Explain the action of chemical mutagen 5-bromouracil.
8. Write the various characteristics of protozoa.
9. Write the various methods used for preservation of microbial cultures.
10. Write the principle involved in acid-fast staining.

P.T.O



11. Explain about oligodynamic action of metal ions.
12. Write the conditions, mechanism of action and one application of ethylene oxide as sterilizing agent.
13. Differentiate between 'antiseptic' and 'disinfectant'.
14. Write notes on molecular membrane filtration.
15. Write about the structure of the antibody.
16. Write notes on vectors.
17. Differentiate between acquired active and acquired passive immunity.
18. How gamma radiation is acting as sterilizing agent?



**II/IV B.PHARMACY DEGREE EXAMINATIONS, JAN-2017**

**Third Semester**

**B.PHARMACY**

**PHARMACEUTICAL MICROBIOLOGY**

**Time: Three Hours**

**Maximum marks:70**

**SECTION-A**

**Answer any FOUR Questions**

**4X10=40M**

1. Write about the following
  - a) Bacterial transformation
  - b) Protozoa
2. Describe in detail about the procedure of microbial examination of milk with respect to its quality.
3. Write in brief about the following
  - a) Principle and procedure of acid-fast staining
  - b) Effect of osmotic pressure on bacterial growth.
4. Describe any one method in detail to evaluate the disinfectant activity of a compound.
5. Write the various types of immunoglobulins, their presence and functions. Add note on principle of ELISA.
6. Write about the etiology, source of infection, mode of transmission, prevention and control of the following diseases:
  - a) Food poisoning
  - b) Hepatitis

**SECTION-B**

**Answer any TEN Questions**

**10X3=30M**

7. Explain the action of chemical mutagen nitrous acid.
8. Write the various characteristics of virus.
9. Write the various methods used for preservation of microbial cultures.
10. Write the principle involved in Gram's staining.
11. Explain the effect of metal ions on bacterial growth.
12. Write the conditions, mechanism of action and one application of formaldehyde as sterilizing agent.
13. Differentiate between bacterial endo toxins and exotoxins.
14. Mention various types of serological reactions used for diagnosis purpose
15. Write about the structure of the antibody.
16. Write notes on carriers.
17. Differentiate between acquired active and acquired passive immunity.
18. How steam under pressure is acting as sterilizing agent?

**II/IV B.PHARMACY DEGREE EXAMINATIONS, JANUARY-2017**

**Third Semester**

**PHARMACEUTICAL MICROBIOLOGY**

**Time: Three Hours**

**Maximum marks:70**

**SECTION-A**

**Answer any FOUR questions. (4 x 10=40 M)**

1. What are the distinguishing characteristics of each of the three types of gene transfer in bacteria.
2. a) Compare the advantages and disadvantages of the various techniques for the isolation of microorganism in pure culture.  
b) What are the advantages and disadvantages of the various methods for preservation of pure culture.
3. Indicate the various toxic derivatives of oxygen and explain how aerobic organisms might protect themselves against these derivatives.
4. Name several different staining techniques and describe their particular applications. What are the major differences between Gram positive and Gram negative bacteria?
5. Write the special functional names and characteristics of antibodies when they are allowed to act on certain types of antigens. Compare the derivaiton of B cells and T cells.
6. List several different kinds of radiations that are destructive to microorganisms. Comment on the practical application of each. Add note on fractional sterilization.

**SECTION-B**

**Answer any TEN questions. (10 x 3=30 M)**

7. Write notes on mutagens.
8. Draw a typical bacterial cell and identify all parts.
9. Differentiate between phototrophs and chemotrophs.
10. Write about exponential phase in bacterial growth curve.
11. Differentiate between the terms bacteriostatic and bactericide.
12. Write notes on HEPA filters.
13. Write the mode of action of ethylene oxide and chlorine in control of bacterial growth.
14. Write notes on vectors.
15. Write notes on bacillary dysentery.
16. Write notes on amoebiasis.
17. Differentiate between endotoxins and exotoxins.
18. Write the four primary characteristics of a generalized immune response.

**II/IV B.PHARMACY DEGREE EXAMINATIONS, JUNE/JULY- 2016**

**Third Semester**

**PHARMACEUTICAL MICROBIOLOGY**

**Time: Three Hours**

**Maximum marks:70**

**SECTION-A**

**Answer any FOUR questions.**

**4x10=40M**

**All questions carries equal marks.**

1. Write the distinguishing characteristics of each of the three types of genetic recombination in bacteria.
2. Describe the various techniques used for isolation of pure culture of microorganisms. Add note on preservation of pure cultures.
3. Draw a typical bacterial growth curve and label the various phases. Discuss those factors which determine the beginning and end of each phase.
4. Distinguish between (a) phototrophs and chemotrophs, (b) lithotrophs and organotrophs, (c) autotrophs and heterotrophs and (d) psychrophiles and mesophiles.
5. Provide an account of the general structure of an immunoglobulin molecule giving reference to variable region and constant region. Add note on hypersensitivity reactions.
6. List several halogens and compounds of halogens that are used to control microbial populations. Describe several practical applications for these agents and write their mode of action upon microorganisms.

**SECTION-B**

**Answer any TEN questions.**

**10x3=30M**

7. Write notes on frame shift and point mutations.
8. Draw a typical virus particle and identify all parts.
9. Differentiate between sterile and disinfected.
10. Compare between viable and total count.
11. Differentiate between Gram's and acid fast staining.
12. Write notes on filters used in air sterilization.
13. Write the mode of action of dry heat and moist heat in killing of microbial growth.
14. Write notes on carriers.
15. Write notes on tuberculosis.
16. Write notes on AIDS.
17. Differentiate between endotoxins and exotoxins.
18. Explain the terms 'epitope' and 'haptens'.



**II/IV B.PHARMACY DEGREE EXAMINATIONS, JAN/FEB- 2016****Third Semester****PHARMACEUTICAL MICROBIOLOGY****Time: Three Hours****Maximum marks:70****SECTION-A****Answer any FOUR questions.****4X10=40M**

1. Differentiate between bacterial transduction and transformation methods. Add note on types of mutations.
2. Derive the equation for determination of generation time. Explain the exponential phase of bacterial growth curve.
3. Explain the effect of ultrasonic waves, pH and osmotic pressure on bacterial growth.
4. Write the conditions used, mode of action merits and limitations of the following sterilization methods i) radiation by gamma rays ii) membrane filtration.
5. Explain in detail about cell mediated immunity. Write the principle involved in neutralization and agglutination tests.
6. Write the etiology, diagnosis, source of infection, prevention and control of leprosy, hepatitis and malaria.

**SECTION-B****Answer any TEN questions.****10X3=30M**

7. Write the classification of bacteria based on oxygen utilization and give example for each
8. Write the principle involved in spore staining
9. Write the principle involved in viable count and how it differs from total count.
10. Explain lyophilization method for preservation of microbial cultures.
11. Write the limitations of sterilization by moist heat.
12. Explain the terms 'epitope' and 'opsonization'.
13. Write notes on carriers.
14. Write about the control of bacterial growth by metal ions.
15. Write the parts of the antibody.
16. Write notes on food poisoning.
17. Write notes on structure of virus.
18. Write notes on ELISA

## II/IV B.PHARMACY DEGREE EXAMINATIONS, JANUARY-2017

## Third Semester

**PHARMACEUTICAL MICROBIOLOGY****Time: Three Hours****Maximum marks:70****SECTION-A****Answer any FOUR questions. (4 x 10=40 M)**

1. What are the distinguishing characteristics of each of the three types of gene transfer in bacteria.
2. a) Compare the advantages and disadvantages of the various techniques for the isolation of microorganism in pure culture.  
b) What are the advantages and disadvantages of the various methods for preservation of pure culture.
3. Indicate the various toxic derivatives of oxygen and explain how aerobic organisms might protect themselves against these derivatives.
4. Name several different staining techniques and describe their particular applications. What are the major differences between Gram positive and Gram negative bacteria?
5. Write the special functional names and characteristics of antibodies when they are allowed to act on certain types of antigens. Compare the derivation of B cells and T cells.
6. List several different kinds of radiations that are destructive to microorganisms. Comment on the practical application of each. Add note on fractional sterilization.

**SECTION-B****Answer any TEN questions. (10 x 3=30 M)**

7. Write notes on mutagens.
8. Draw a typical bacterial cell and identify all parts.
9. Differentiate between phototrophs and chemotrophs.
10. Write about exponential phase in bacterial growth curve.
11. Differentiate between the terms bacteriostatic and bactericide.
12. Write notes on HEPA filters.
13. Write the mode of action of ethylene oxide and chlorine in control of bacterial growth.
14. Write notes on vectors.
15. Write notes on bacillary dysentery.
16. Write notes on amoebiasis.
17. Differentiate between endotoxins and exotoxins.
18. Write the four primary characteristics of a generalized immune response.