**PHARMACEUTICAL MICROBIOLOGY QB**

UNIT 1

10 Marks

1. Classify bacteria on the basis of nutritional requirements and add a note on raw materials used for Preparation of culture media.
2. Define and classify culture media. Mention salient feature of each media along with an example.
3. Draw an ultra structure of typical bacteria. Write composition and functions of its organelles.
4. Classify bacteria on the basis of morphological features. Add a note on composition and functions of Cell wall.
5. Differentiate between gram positive and Gram negative cell wall. Add a note on principle and Procedure of Gram’s staining technique.
6. Describe bacterial growth curve. Add a note on physical factors affecting growth of bacteria.
7. Mention methods used for identification of bacteria. Explain any four biochemical tests used for Identification of bacteria.
8. What is pure culture? Enlist methods for isolation of pure culture? Describe any two industrially techniques of preserving bacteria.
9. Write about importance of microbial preservation technique. Write procedure, merit and demerit of any Four preservation techniques.
10. What is pure culture? Write in detail about isolation of pure culture.

5 marks

1. Write a note on raw materials used for preparation of culture media.
2. Define and classify culture media with examples.
3. Classify bacteria on the basis of morphological features.
4. Differentiate between gram positive and Gram negative cell wall.
5. Write principle and procedure of Gram’s staining technique.
6. Write principle and procedure of Acid-fast staining.
7. Describe bacterial growth curve.
8. Explain IMVIC tests used for identification of bacteria.
9. Explain MR-VP tests used for identification of bacteria.
10. Write a note on cultivation of anaerobic bacteria.
11. Write about methods for maintenance of pure culture.
12. Write about importance of microbial preservation technique.
13. Differentiate between prokaryotes and Eukaryotes
14. Outline working of TEM and SEM
15. Give the principle and main characteristic of phase contrast microscopy
16. Explain the principle of Electron microscope.

2 marks

1. Differentiate between flagella and fimbrae.
2. Differentiate between enrichment and selective media.
3. Differentiate between log phase and decline phase.
4. Differentiate between acid fast and non acid fast bacteria.
5. Differentiate between bacteria and virus.
6. Differentiate between fungi and bacteria.
7. Mention reagents used for acid fast staining.
8. Mention role of each chemical used in gram’s staining.
9. What is basal media? Give example.
10. What is enriched media? Give example.
11. What is differential media? Give example.
12. What is the role of agar in culture media.
13. What is selective media? Give example.
14. What is pour plate method, write its uses.
15. Mention arrangement based classification of cocci.
16. What is lag phase of growth.
17. What is log phase of growth.
18. What is stationary phase of growth.
19. What is decline phase of growth.
20. List out the different phases of growth of bacteria
21. Write contributions of Antony Van Leeuwenhoek.
22. Write contributions of Edward Jenner.
23. Write contributions of Robert Koch.
24. Write contributions of Louis Pasteur.
25. Write contributions of Alexander Fleming.
26. Write four pharmaceutical uses of microorganisms.
27. State Koch’s postulates.

UNIT 2

1. Explain the principle, procedure, applications and demerits of sterilization using autoclave
2. Explain the principle, procedure, applications and demerits of sterilization using hot air oven
3. Explain the mechanism of action, procedure, applications and factors affecting sterilization using ethylene oxide.
4. Explain the source, mechanism of sterilisation, merit, demerits and applications of sterilization using radiations.
5. Explain principles involved in sterilisation by filtration. Add a note on its merits and demerits

5 Marks

1. Explain the mechanism of sterilization and heat transfer by hot air oven.
2. Explain the principle involved in autoclaving.
3. Write the procedure, merits and demerits of membrane filtration
4. Write the procedure, merits and demerits of ethylene oxide sterilization
5. Explain the factors affecting gaseous sterilization
6. Mention indicators used for various sterilization methods
7. Write the production, mechanism of action, demerits and applications of UV radiations.
8. Explain MR-VP tests used for identification of bacteria.
9. Write the significance of various reagents used in Gram staining and Acid fast staining
10. Write principle and procedure of Gram staining.
11. Write principle and procedure of acid-fast staining.
12. Explain IMVIC tests used for identification of bacteria.
13. Describe any two methods of viability counting.
14. Describe any two methods of total counting.

2 marks

1. Mention the demerits of ethylene oxide sterilization
2. Write bio-indicators for thermal sterilization.
3. Write applications of uv radiations.
4. What is Pasteurization? Mention methods
5. Define sterilization
6. Classify physical method of sterilization
7. Explain the advantages of autoclaving over hot air sterilization.
8. List out any four applications of Gamma irradiation.
9. Mention any four applications of autoclave.
10. Mention any four applications of dry heat sterilization.
11. Mention any four applications of gaseous sterilization.
12. Mention any four applications of ethylene oxide sterilization
13. Mention any four applications of filtration sterilization.

UNIT 3

10 marks

1. Classify disinfectants. Write the mechanism of action and uses of phenolic disinfectants.
2. Explain different factors affecting disinfection.
3. Explain different methods for evaluation of bacteriostatic disinfectant
4. Discuss in detail about Redial Walker’s test.
5. Enlist various methods of evaluation of bacteriostatic and bactericidal disinfectant.Explain anyMethod of bacteriostatic disinfectant.
6. Write classification, mechanism of action and uses of phenolic and aldehyde disinfectants.

5 marks

1. Write a note on cultivation of virus.
2. Discuss about merits and demerits of viral cultivation techniques.
3. Describe steps involved in replication of virus.
4. Write about classification of virus.
5. Marks
6. Mention media for cultivation of fungi
7. Mention pharmaceutical uses of fungi.
8. Write structure of typical virion.
9. What is mycelium?
10. Why are virus described as obligate parasites?
11. Give examples for disinfectants with viricidal activity
12. Give two examples for alcoholic disinfectants.
13. Differentiate between disinfection and antisepsis.
14. Write the ideal properties of disinfectant
15. Define disinfection.
16. Mention the factors affecting disinfectant aactivity
17. Difference between bacteriostatic and bactericidal agents.
18. What is direct inoculation method?
19. Write the significance of positive control in sterility testing.
20. What is direct inoculation method of sterility testing?
21. Write the principle of sterility testing.
22. Write the principle of membrane filtration method of sterility testing.

UNIT 4

5 Marks

1. Write in detail about the construction and design of aseptic room
2. What are the main sources of contamination of an aseptic room? How will you prevent it?
3. Describe construction and working of laminar air flow
4. Classify clean area according to British standard and US standards
5. What are the sources of contamination and their control in aseptic room?
6. Describe the general procedure of antibiotic assay
7. Write briefly on different methods used for microbiological assay of antibiotics
8. Outline the process of assessment of new antibiotic.
9. Explain principles involved in microbiological assay of streptomycin
10. Explain principles involved in microbiological assay of vitamin B12
11. marks
12. What are Rodac plates?
13. What is Grade 100?
14. How will you validate HEPA filter?
15. Write note on Grade B room
16. Draw a flow diagram of an aseptic area

Unit 5

5 marks

* 1. Explain different factors affecting microbial spoilage of Pharmaceuticals
	2. Define cell culture, give the merits, demerits and application of cell culture
	3. Explain the different sources and types of microbial contamination of pharmaceuticals.
	4. Write briefly the general procedure for cell culture
	5. How will you detect microbial contamination in pharmaceuticals
	6. Write briefly on general requirements of cell culture laboratory.
	7. What are the methods used for the evaluation of microbial stability of formulations?
	8. Differentiate between primary and established cell culture
	9. Explain the evaluation of microbial stability of formulations.
	10. Discuss about advantages and disadvantages of cell culture technology.
	11. Explain the preservation of pharmaceutical products using antimicrobial Agents.
	12. Write the applications of cell cultures in pharmaceutical industry and research.

2 marks

* 1. Mention microorganisms causing spoilage of pharmaceuticals.
	2. Write the incubation conditions for cell culture
	3. What are the visible changes of microbial contaminations in pharmaceuticals
	4. Mention any four major requirements for cell culture laboratory.
	5. How do you assess microbial contamination? Mention
	6. Mention the media used in cell culture
	7. List out different types of microbial contaminants in pharmaceuticals.
	8. What is secondary cell culture?
	9. List out different types of spoilage in pharmaceuticals
	10. What is primary cell culture?
	11. List out sources of microbial contaminations in pharmaceuticals
	12. What are cell lines?