JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester III) Examination Dec 2024

Programme: B. Pharm
Course: Pharmaceutical Microbiology **Full Marks: 75**
Course Code: BP303T **Time: 3 Hrs.**
Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Objective Type Questions**			
	i. Which of the following is a regulatory requirement for sterile pharmaceutical products? a. Absence of pyrogens b. Absence of viable microorganisms c. Both a and b d. Presence of only non-pathogenic microorganisms ii. What is the role of laminar air flow (LAF) in pharmaceutical microbiology? a. To enhance microbial growth for testing b. To create a sterile environment for product preparation c. To sterilize products using UV radiation d. To monitor microbial contamination in the air iii. Bad odour of vegetables is due to - a.Clostridium b.Pseudomonas c.E. coli d.Rhizopus iv. A key application of cell culture in the pharmaceutical industry is: a.Soil testing b.Biopharmaceutical production c.Virus isolation in environmental microbiology d.Antibiotic resistance testing v. Aseptic technique is critical in the preparation of- a. Oral.solid dosage forms b.Topical ointments c.Parenteral products d.Sublingual tablets vi. Which organism is commonly used as an indicator of sterility in autoclave validation? a.Escherichia coli b.Bacillus stearothermophilus c.Staphylococcus aureus d.Pseudomonas aeruginosa vii. Microorganisms used for alcohol production- a. Saccharomyces sereviceae b. Bacillus subtilis c. Penicillium chrysogenum d. None of these viii. Grade D air borne particle is based on classification of -a.ISO 8 b.ISO 3 c.ISO 5 d.ISO 7 and 8 ix. In vertical Laminar flow cabinet, air leave the working area via -a. HEPA filter b.Holes from the top c. Holes in the base d. None of these x. Dust particle removed by HEPA filter is- a.0.5µm b.0.2µm c.0.03µm d.0.3µm xi. Which of the following materials is commonly sterilized using a hot air oven? a) Liquids b) Heat-sensitive plastics c) Glassware and metal instruments d) Biological samples xii. In laminar air flow systems, which component is crucial for maintaining sterility? a) UV light b) HEPA filter c) Chemical disinfectant d) Air conditioning unit xiii. Which of the following are chemical indicators of sterilization :- (a) Browne's tube (b) Witness tube (c) Royce Sachet (d) All of the above xiv. Testing which confirms that products are free from the presence of viable microorgamisn is known as: (a) Sterility testing (b) Pyrogen testing (c) Minimum Inhibitory coefficient (d) None of the above xv. What is the main limitation of using chemical indicators as sterility indicators? a) They are more expensive than biological indicators b) They do not guarantee sterility c) They require special storage conditions d) They provide immediate results xvi. Which of the following is a common use for laminar air flow systems? a) Sterilizing liquids b) Providing a sterile work environment for handling sensitive materials c) Decontaminating surfaces d) Heating sterile instruments xvii. The functions of plasmid are - a. DNA replication b. Protein synthesis c. Cell wall synthesis d. None of the above xviii. Who is known as the "Father of Microbiology"? a) Alexander Fleming b) Roger Bacon c) Antonie van Leeuwenhoek d) Louis Pasteur xix. Who discovered the first antibiotic, penicillin? a) Roger Bacon b) Alexander Fleming c) Antonie van Leeuwenhoek d) Francesco Stelluti xx. What is the color of Gram-negative bacteria after Gram staining? a) Purple b) Pink c) Blue d) Green	CO1	Remember	**1 x 20 = 20**
	Section II			
2. Short Answer type questions.				**7 x 5 = 35**
a	Draw a well labeled diagram of bacterial cell.(ULTRA STRUCTURE)	CO1	Understand	
b	Classify different types of staining techniques based on their uses. Explain simple staining procedure as a flowchart.	CO2	Remember	
c	Explain the classification of virus.	CO3	Understand	

d	Draw and explain the working principle of laminar air flow.	CO4	Remember	
e	Differentiate between primary, established, and transformed cell cultures in the context of pharmaceutical research.	CO5	Understand	
f	Define spoilage. Explain the different types of spoilages.	CO5	Remember	
	or			
	Define cell culture and it's applications in research and industry	CO5	Understand	
g	Mention the applications of hepa filter in sterilization.	CO4	Understand	
	or			
	Explain the principle of microbiological assay.	CO4	Understand	
Section III				
Long Answer Type questions				**2 x 10 = 20**
3	Explain the principles, procedures, advantages, disadvantages of hot air oven in the context of disinfection.	CO3	Analyze	
	or			
	Analyze the various evaluation techniques used to assess bactericidal and bacteriostatic activities. Discuss the methodologies, principles, and significance of each technique.	CO3	Analyze	
4	Analyze the process of bacterial identification using Gram staining and the IMViC test. Discuss how each method contributes to differentiating bacterial species, providing detailed insights into the procedures and their diagnostic significance.	CO2	Analyze	
	or			
	Critically analyze the concept of microbiology by discussing its historical development, current scope and potential applications in various scientific fields.	CO2	Analyze	

Course Outcomes (CO):

CO1: Employ the knowledge of identification, cultivation and preservation of various microorganisms
CO2: Implement the sterilization process in pharmaceutical industries
CO3: Describe the Employ the microbiological assay and sterility testing.
CO4: Evaluate the efficacy of antimicrobial agent
CO5: Describe the evaluation of microbial stability of formulations and cell culture