Name: **Enrolment No:**	

UPES

End Semester Examination December 2025

Course: Pharmaceutical Microbiology **Semester: III**

Program: B. Pharm **Duration: 03 Hours**

Course Code: BP303T **Max. Marks: 75**

Instructions: No additional material like graph paper, log table, *etc* is allowed for this examination.

SECTION A

(20 Q x 1 M = 20 Marks)

S. No.	Attempt all questions from section A.	Marks	COs
Q 1	Prokaryotes differ from eukaryotes mainly in having: a) True nucleus b) Membrane-bound organelles c) Peptidoglycan cell wall d) Linear chromosomes	**1**	**CO1**
Q 2	First person to observe living cells with a simple microscope was: a) Antoni Van Leeuwenhoek b) Rudolf Ludwig Carl Virchow c) Francesco Redi d) Lazzaro Spallanzani	**1**	**CO1**
Q 3	Decimal reduction time (D-value) is a) the time taken at a fixed temperature to achieve a 90% reduction in viable count b) the temperature required at a fixed time to achieve a 90% reduction in viable count c) the time taken at a fixed temperature to achieve a 10% reduction in viable count d) the time taken at a fixed temperature to achieve a 100% reduction in viable count	**1**	**CO1**
Q 4	Swan-necked flask experiment was conducted by: a) Jonas Edward Salk c) Louis Pasteur c) Francesco Redi d) Antoni Van Leeuwenhoek	**1**	**CO1**
Q 5	Gram-positive bacteria retain the primary stain due to: a) Thin peptidoglycan layer b) Thick peptidoglycan layer c) Presence of LPS d) Absence of lipid	**1**	**CO1**
Q 6	The lag phase of the bacterial growth curve is characterized by: a) Rapid cell division b) No increase in cell number c) Maximum metabolic activity d) Death of cells	**1**	**CO1**
Q 7	A biological indicator for autoclave sterility is: a) *Bacillus stearothermophilus* b) *Bacillus subtilis* c) *E. coli* d) *Clostridium botulinum*	**1**	**CO1**
Q 8	Phenol coefficient test is used to evaluate: a) Antibiotics b) Disinfectants c) Sterility indicators d) Antiseptics	**1**	**CO1**
Q 9	Cylinder plate method is used for assay of: a) Vitamins	**1**	**CO1**

	b) Antibiotics c) Hormones d) Amino acids		
Q 10	Below is the decoloring agent used in Gram's staining: a) Gram's Iodine b) 95% alcohol / isopropanol-acetone c) Distilled water containing 5% acid d) Water for injection	**1**	**CO1**
Q 11	Second phases in the bacterial growth curve is a) Lag phase b) Log phase c) Stationary phase d) Gamma phase	**1**	**CO1**
Q 12	Sterility test for ophthalmic products uses: a) Fluid thioglycollate medium b) Sabouraud agar c) MacConkey agar d) Blood agar	**1**	**CO1**
Q 13	Expend the term IMViC.	**1**	**CO1**
Q 14	Microbiological assay is based on: a) Growth response b) Toxic response c) Binding affinity d) Absorption	**1**	**CO2**
Q 15	Viruses replicate only in: a) Inert surfaces b) Non-living media c) Living host cells d) Artificial media	**1**	**CO2**
Q 16	The counterstain in Acid-fast staining is: a) Methylene blue b) Safranin c) Nigrosin d) Neutral red	**1**	**CO2**
Q 17	FBS (Fetal Bovine Serum) provides: a) Growth factors b) Vitamins c) Lipids d) All of the above	**1**	**CO4**
Q 18	Phenolics act on microbes by: a) denaturing proteins b) disrupting cell membranes c) both a and b d) none of the above	**1**	**CO4**
Q 19	Microbial spoilage of pharmaceuticals is influenced by: a) Temperature b) pH c) Water activity d) All of the above	**1**	**CO4**
Q 20	Primary cell cultures are derived directly from: a) Cell lines b) Animal tissues c) Bacterial colonies d) Plant cells	**1**	**CO5**

SECTION B (20 Marks) (2 Q x 10 M = 20 Marks)			
	Attempt any two questions from section B.	**Marks**	
Q 1	Define sterilization. Explain the protocol for sterility testing by membrane filtration method.	**2+8**	**CO2**
Q 2	Explain the principle of bacterial staining. Describe the procedure used for the bacterial identification by simple staining method.	**2 + 4 + 4**	**CO4**
Q 3	Define phenol coefficient. Explain determination of phenol co-efficient by Rideal Walker and Chick Martin test methods.	**2+8**	**CO5**
SECTION-C (35 Marks) **(7 Q x 5 M = 35 Marks)**			
	Attempt any seven questions from section C.	**Marks**	
Q 1	Describe the design of an aseptic area and the working of laminar airflow equipment.	**5**	**CO1**
Q 2	Differentiate between the Gram positive and Gram-negative cell wall.	**5**	**CO1**
Q 3	Explain the procedure followed for the identification by Gram's staining technique.	**5**	**CO1**
Q 4	Describe the indole production test biochemical tests (IMViC) in bacterial identification.	**5**	**CO3**
Q 5	Describe various factors affecting effectiveness of disinfectants.	**5**	**CO4**
Q 6	Explain factors affecting microbial spoilage of pharmaceutical products.	**5**	**CO4**
Q 7	Describe Rideal Walker method to evaluate the effectiveness of disinfectants.	**5**	**CO4**
Q 8	Explain tube assay method used in microbiological assay.	**5**	**CO5**
Q 9	Write a note on applications of cell cultures in the pharmaceutical research.	**5**	**CO5**