

Name:

Enrolment No:



UPES

End Semester Examination, December 2024

Course : Bacteriology

Semester : I

Program : M.Sc.-Microbiology

Duration : 3 Hours

Course Code: HSMB7035

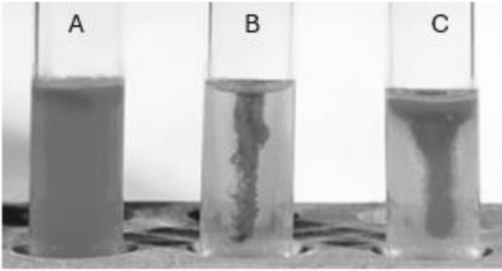
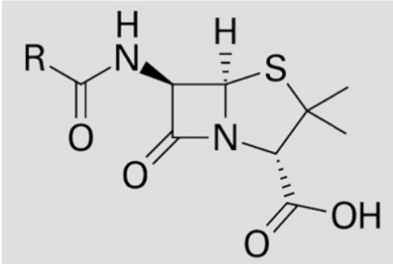
Max. Marks:100

Instructions: All questions are compulsory.

Please read the questions carefully. The paper contains four sections

S. No.	Section A	Marks	COs
	Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)		
Q 1	Spot amongst the following the part of the cell which is least useful in serological typing of bacteria a. Capsule b. Flagella c. Cell wall d. Ribosomes	1.5	CO1
Q2	Discover the incorrect statement from the following a. <i>Escherichia coli</i> stains pink because it has a thin peptidoglycan layer b. <i>Streptococcus pyogenes</i> stains blue because it has a thick peptidoglycan layer c. <i>Mycoplasma pneumoniae</i> is not visible in the Gram's stain because it does not have a cell wall d. <i>Mycobacterium tuberculosis</i> stain blue because it has a thick lipid layer	1.5	CO2
Q3	Pick the correct answer. In <i>Streptococcus faecalis</i> , the conjugation takes place at a. Cell membrane b. Flagella c. Pili d. Stalk	1.5	CO1
Q4	Identify the correct answer. Mesosomes are the part of a. Plasma membrane b. ER c. Lysosomes d. Golgi	1.5	CO1
Q5	Spot the correct answer. Secretion systems are very often observed in a) Both gram types of bacteria b) Viruses c) Gram negative bacteria d) Gram positive bacteria	1.5	CO1
Q6	Relate to the most accurate statement. A type of bacteria, pleomorphic in shape forms fried egg colonies was exposed to hypotonic medium. What is expected to happen? a) Bacterial cells will shrink b) Bacteria cells will remain as it is c) Bacteria will lyse d) Bacteria will accumulate salt	1.5	CO1

Q7	Match the following 1 Staphylococcus 2 Bacillus 3 Pseudomonas 4 Mycobacterium	a. Weakly gram positive b. Gram negative c. Gram positive d Gram positive	1.5	CO1
Q8	Describe if nucleus is present in the following organisms a. Bacteria b. Archaea c. Plants d. Protozoan		1.5	CO3
Q9	'Bacterial organelles are smaller in dimension than eukaryotes.' Comment on the statement true or false and reason why.		1.5	CO2
Q10	Metachromatic granules are chemically composed of a. Lipids b. Proteins c. Polymetaphosphates d. Polysaccharide		1.5	CO2
Q11	Arrange the following based on their water activity requirements, with the one requiring lowest water activity first: Fungus, Algae, Bacteria		1.5	CO2
Q12	Which of following is not a feature of virulent bacteria a. Capsule b. Pili c. Bioluminescence d. Flagella		1.5	CO2
Q13	The principle involved in the streak plate method is a. Separation b. Streaking c. Isolation d. Dilution		1.5	CO1
Q14	Define endoflagella.		1.5	CO1
Q15	Cite an example where endoflagella are observed.		1.5	CO3
Q16	Cite an example with the use of differential media.		1.5	CO3
Q17	Illustrate with the help of a diagram a typical bacterial cell.		1.5	CO1
Q18	Bacterial sterols havemembered rings while eukaryotic ones have membered ring		1.5	CO3
Q19	Enlist the names of monomers of bacteria cell wall.		1.5	CO2
Q20	Summarize the main points (2-3) of similarity between archaea and prokaryotes		1.5	CO2
Section B (4Qx5M=20 Marks)				
Q21	a. Differentiate between pili and flagella. b. Cite reasons why ribosomes of bacteria are inhibited by antibiotics but not our cells		5 (3+2)	CO1
Q22	a. Define inclusion bodies b. Classify them c. Cite few examples		5 (1+3+1)	CO2
Q23	a. Explain with a suitable diagram a typical growth curve of bacteria. b. Define generation time.		5 (3+2)	CO1
Q24	a. Who laid foundation of bacteriology? b. Write the principles he laid down and what are they called that laid down foundation of bacteriology? c. Are their any modifications of those steps that we use now?		5 (1+3+1)	CO2

Section C (2Qx15M=30 Marks)			
Q 25	<p>You modified agar motility test to suit your experiments. There are three tubes below; with motile bacteria and non-motile bacteria. Given this; answer the following questions:</p> <div style="text-align: center;">  </div> <p>a. Amongst the three A, B and C distinguish between motile and non-motile bacteria. b. Reason why are bacteria motile and some non motile? (name appendage) c. Illustrate the structure of this appendage in bacteria. d. Explain how this appendage is different in eukaryotes. e. Some bacteria with this appendage give chemotactic responses while others don't. Define chemotaxis. Infer what is the role of this bacteria in chemotaxis with suitable example.</p>	15 (1.5+1.5+ 5+1+6)	CO4
Q26	<p>A bacterium uses a multicomponent machinery to transfer DNA into plant cells in one step. This multicomponent system is ancestrally related to DNA conjugation machinery.</p> <p>a. Describe which system is being referred to? b. Enlist what are the substrates/processes this multicomponent system regulates. c. Name the bacterium being referred to in the text. d. Illustrate the role it plays and the disease it leads to in plants. e. Enlist if there are any such systems which are related to flagellar machinery. f. Are there such systems which are used by both types of bacteria? Enlist those systems. Elaborate on the types and roles of those multicomponent system (at least one) which are present in both gram-positive and gram-negative bacteria.</p>	15 (1+2+1+3 +1+7)	CO3
Section D (2Qx10M=20 Marks)			
Q 27	<p>a. Evaluate what are two component systems. b. Explain, why are they called so? c. Where are they found?</p>	10 (8+1+1)	CO3
Q28	<p>a. Give an account of types of antimicrobials used in antibacterial chemotherapy. b. Spot the antibiotic. Enlist its mode of action. Also, write about the mechanism of resistance of this antibiotic.</p> <div style="text-align: center;">  </div>	10 (6+4)	CO1