Name:

Enrolment No:

UPES

End Semester Examination, December 2024

Course : Prokaryotic microbiology **Semester : III**

Program : BSC-MICROBIOLOGY **Duration : 3 Hours**

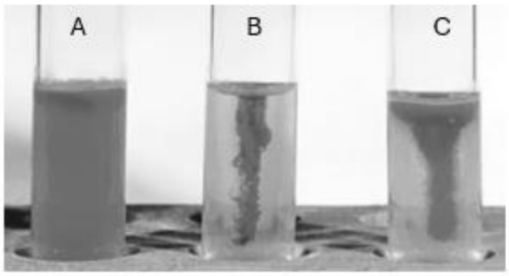
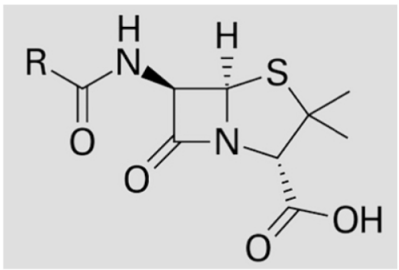
Course Code: HSMB 2030 **Max. Marks:100**

Instructions: All questions are compulsory.

Please read the questions carefully. The paper contains four sections

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	Spot amongst the following the part of the cell which is least useful in genotypic typing of bacteria a. Capsule b. DNA c. RNA d. Ribosomes	1.5	CO1
Q2	Discover the incorrect statement from the following a. *Escherichia coli* stains pink because it has a thin peptidoglycan layer b. *Streptococcus pyogens* stains blue because it has a thick peptidoglycan layer c. *Mycobacterium tuberculosis* stain blue because it has a thick lipid layer d. *Mycoplasma pneumoniae* is not visible in the Gram's stain because it does not have a cell wall	1.5	CO1
Q3	Pick the correct answer. In *E. coli*, the conjugation takes place at a. Pili b. Flagella c. Stalk d. Cell membrane	1.5	CO1
Q4	Enzyme hydrolyzing bacterial cell wall a. Lysozome b. Reductase c. Protease d. Lysozyme	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 positive bacteria d) Gram negative bacteria	1.5	CO2
Q6	Spot the organism/s where nucleus is absent a. Bacteria b. Archaea c. Plants d. Protozoan	1.5	CO1
Q7	Define gene reassortment. Where is it observed?	1.5	CO3
Q8	Enlist the name of reverse transcriptase inhibitor and write 1-2 lines on mode of action.	1.5	CO3
Q9	Describe the function of reverse transcriptase.	1.5	CO3

Q10	Frankael-Conrat experiment proved that a. TMV is a plant virus b. RNA is the genetic material in TMV c. TMV is helical d. TMV can be crystallized	1.5	CO3
Q11	Identify, which is the following has two membranes a. Gram negative b. Gram positive c. Mitochondria d. Both a and c	1.5	CO1
Q12	Recognize which of the following is pleomorphic a. Virus b. Mycoplasma c. Mycobacteria d. Staphylococcus	1.5	CO2
Q13	Discuss what are nucleoside analogues.	1.5	CO4
Q14	Comment on the role of nucleoside analogues in virology.	1.5	CO4
Q15	Cite where is endotoxin found.	1.5	CO2
Q16	Secretion systems are involved in a. Secretion of endotoxin b. Secretion of exotoxin c. Conjugation d. Both a and b e. Both a, b and c	1.5	CO3
Q17	Define cytopathic effects.	1.5	CO3
Q18	A cell supporting replication of a virus is called a. Susceptible b. Resistant c. Permissive d. Non-permissive	1.5	CO3
Q19	Gas vacuoles help in maintaining buoyancy. Comment on the statement.	1.5	CO2
Q20	Write the full form of FAME. Where is it used in bacteriology?	1.5	CO1
Section B (4Qx5M=20 Marks)			
Q21	Discuss about major types of vaccine strategies against viruses.	5	CO4
Q22	Elaborate on the assembly in viruses with examples.	5	CO3
Q23	a. Explain with a suitable diagram a typical growth curve of bacteria. b. Define generation time.	5 (3+1+1)	CO2
Q24	Describe what are endospores and when and how are they formed.	5	CO1
Section C (2Qx15M=30 Marks)			
Q25	A new virus was found by you in a research lab. It looks spherical under the electron microscope. You wish to understand its structure. Based on this answer the following a. Describe the possible structure of virus. b. Explain why is electron microscope required to view it.	15 (1+2+7 +3+2)	CO4

	c. Elaborate on the structural classification of viruses. Cite examples of each kind. d. Discuss the components that are encoded by host cell. Cite 1-2 examples of useful virus/es.		
Q26	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:  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.	15 (1.5+1.5 +5+1+6)	CO3
Section D (2Qx10M=20 Marks)			
Q27	Elaborate Baltimore classification of viruses. Cite examples of each class. Explain the central theme around which Baltimore classification is revolves.	10 (7+2+1)	CO3
Q28	a. Give an account of antimicrobial resistance mechanisms in bacteria. b. Spot the antibiotic. Enlist its mode of action. Also, write about the mechanism of resistance of this antibiotic. 	10 (6+4)	CO2