
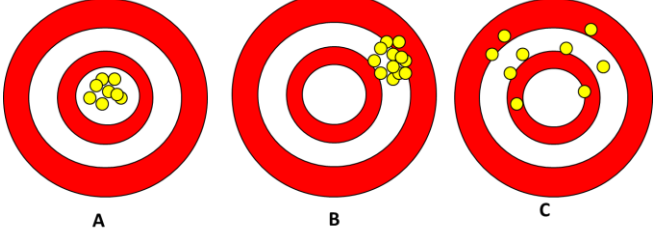
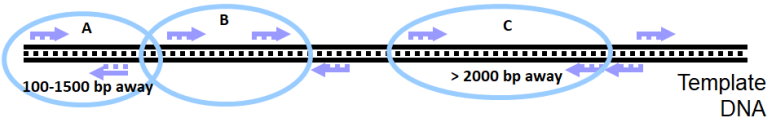
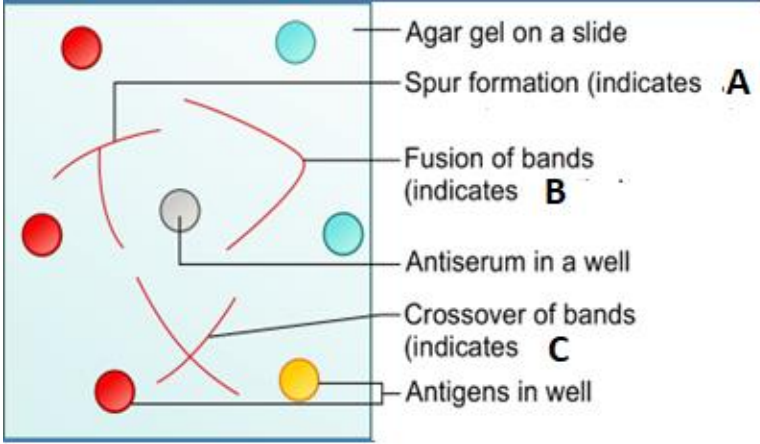
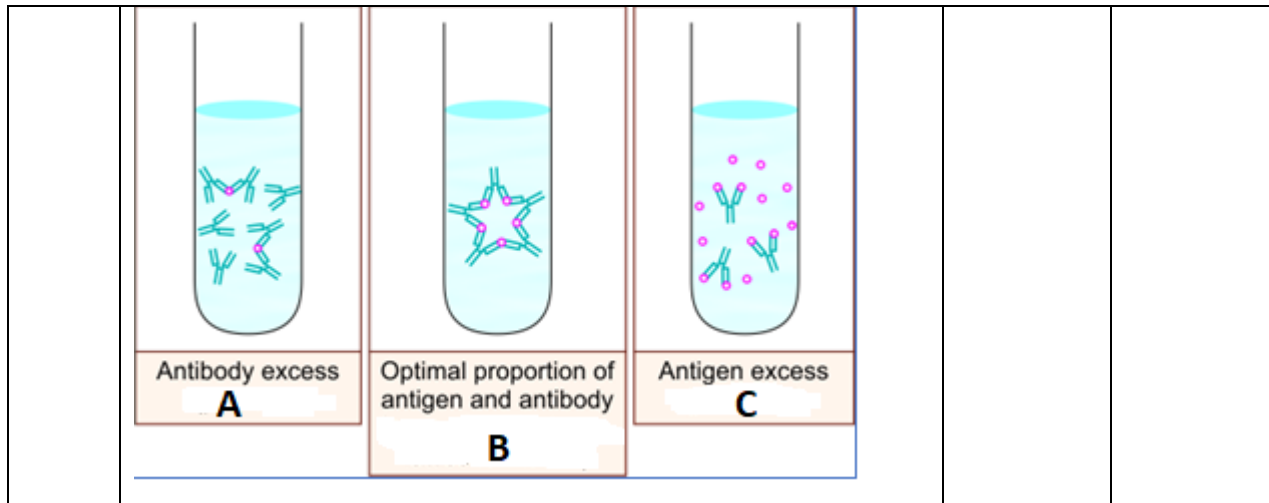


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, May 2023			
Course: Diagnostic Microbiology Program: M. Sc. Microbiology Course Code: HSMB 7016		Semester: II Duration: 3 Hours Max. Marks: 100	
Instructions: Read all questions carefully			
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	All of the clinical specimens submitted to the medical laboratory must be (A) properly and carefully collected (B) properly transported to the laboratory (C) properly labeled (D) all the above	1.5	CO1
Q 2	Specimens collected for the laboratory diagnosis of dermatophytes (Fungal infection) (A) Nail clippings (B) Skin scrapings (C) Blood (D) A and B	1.5	CO1
Q 3	Which of the following statements about urine culture is incorrect? (A) The best type of specimen is a clean-catch midstream urine (B) There are three parts to a urine culture (C) The container into which the patient urinates should be sterile (D) A white blood cell count is part of the urine culture	1.5	CO1
Q 4	Bacterial toxins that are lipopolysaccharides in nature and are an integral part of the bacterial cell wall are called (A) Exotoxins (B) Toxin (C) Endotoxin (D) Virulence factor	1.5	CO1
Q 5	Which of the following is a good example of a selective medium? (A) Blood agar (B) Chocolate agar (C) MacConkey agar Fixation of a specimen to a slide accomplishes all of the following except	1.5	CO1

	(A) killing the organism (B) anchoring the smear to the slide (C) causing the organism to change to a pink or blue colour (D) preserving the morphology of the cells		
Q 6	Gram-positive bacteria stain blue to purple because (A) they possess a thick layer of peptidoglycan, making it difficult to remove the crystal violet-iodine complex during the decolorization step (B) they possess a thick layer of cellulose, making it difficult to remove the crystal violet-iodine complex during the decolorization step (C) they are unable to take up the safranin stain (D) none of the above	1.5	CO1
Q 7	In negative staining, the glass of the slide will stain while bacteria will not. (True/False).	1.5	CO1
Q 8	Bacterial endospores are a (A) means of reproduction (B) survival mechanism (C) means to inactivate antimicrobial agents (D) means of locomotion	1.5	CO1
Q 9	In which of the following immunodiagnostic techniques are visible masses or “clumps” of particles observed when an antigen-antibody reaction has occurred? (A) Complement fixation technique (B) Agglutination technique (C) Precipitation technique (D) None of the above	1.5	CO1
Q 10	Synergistic interactions are: (A) two chemicals cancelling each other out. (B) two chemicals combining into a chemical with more than double the effect. (C) two chemicals that do not interact. (D) one chemical maximizing the effect of another one two chemicals adding up their individual effects	1.5	CO2
Q 11	Which of the following methods of antimicrobial susceptibility testing requires that zone sizes be measured? (A) Agar dilution method (B) Broth macrodilution method (C) Broth microdilution method (D) Disk diffusion method	1.5	CO2
Q 12	Define nosocomial pathogen with example.	1.5	CO2
Q 13	KOH Wet mount method is used to stain _____.	1.5	CO2
Q 14	Label the below given diagram:	1.5	CO2

			
Q 15	Ag-Ab reaction involves specific interaction of _____ of an antigen with the corresponding _____ of antibody.	1.5	CO2
Q 16	Saline wet mount method is used for detection and identification of_____.	1.5	CO2
Q 17	<p>In RAPD assay, a short primer sequence binds at multiple sites of the target sequence and amplify the same. Look into the figure and tell us which region will be amplified:</p> 	1.5	CO2
Q 18	<p>In the given below figure Label A, B, C indicate?</p> 	1.5	CO2
Q 19	Label (A, B and C) the below given diagram:	1.5	CO3



Q 20	<p>The results of a broth microdilution susceptibility test are as follows:</p> <table border="1"> <thead> <tr> <th>Tube</th> <th>Conc.</th> <th>Growth</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2 μM</td> <td>Yes</td> </tr> <tr> <td>2</td> <td>4 μM</td> <td>Yes</td> </tr> <tr> <td>3</td> <td>8 μM</td> <td>Yes</td> </tr> <tr> <td>4</td> <td>16 μM</td> <td>No</td> </tr> <tr> <td>5</td> <td>32 μM</td> <td>No</td> </tr> <tr> <td>6</td> <td>64 μM</td> <td>No</td> </tr> </tbody> </table> <p>What is the MIC for this drug? (A) 8ug/mL (B) 16ug/mL (C) >16ug/mL (D) None of the above</p>	Tube	Conc.	Growth	1	2 μ M	Yes	2	4 μ M	Yes	3	8 μ M	Yes	4	16 μ M	No	5	32 μ M	No	6	64 μ M	No	1.5	CO3
Tube	Conc.	Growth																						
1	2 μ M	Yes																						
2	4 μ M	Yes																						
3	8 μ M	Yes																						
4	16 μ M	No																						
5	32 μ M	No																						
6	64 μ M	No																						

Section B
(4Qx5M=20 Marks)

Q 1	Define MIC and discuss the microbroth dilution method of MIC determination.	5	CO1
Q 2	List any five bacterial diseases and the associated causative agent.	5	CO2
Q 3	Write the collection procedure for nasopharynx and urine samples.	5	CO4
Q 4	Explain the principle and procedure of isolation <i>Neisseria gonorrhoeae</i> by modified Thayer Martin Agar.	5	CO5

Section C
(2Qx15M=30 Marks)

Q 1	(A) Differentiate between: (i) Prevalence and incidence with example.	10+5	CO3
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	(ii) Microscan Walkaway and BD-Phoenix identification system (B) Briefly explain how you can diagnose β -hemolytic streptococci group A (<i>Streptococcus pyrogens</i>) in a clinical laboratory.		
Q 2	1. An individual is infected with an unidentified bacterial pathogen. You have access to his blood sample and a wound swab. To identify the pathogen, explain any molecular assay that you would perform, using the blood sample and justify the selection of your assays. 2. You have isolated a new bacterium which might produce shiga toxin. Explain how you will diagnose new bacteria and the confirmation of toxin produced by this bacterium.	15	CO6
Section D (2Qx10M=20 Marks)			
Q 1	Compare the principle of different types of ELISA (Direct, indirect and sandwich) with illustrations.	10	CO4
Q 2	Write the principle of procedure of IMViC test for identification of Enterobacteriaceae family.	10	CO5