Name: **Enrolment No:**	

UPES

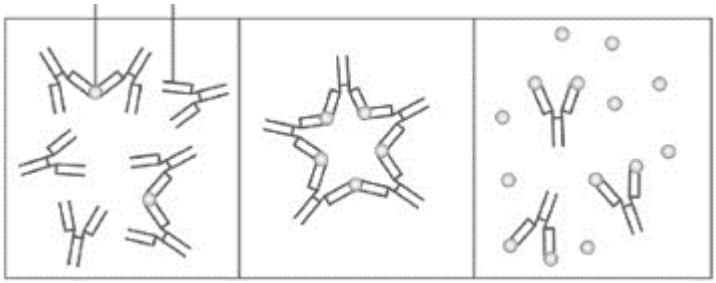
End Semester Examination, May 2024

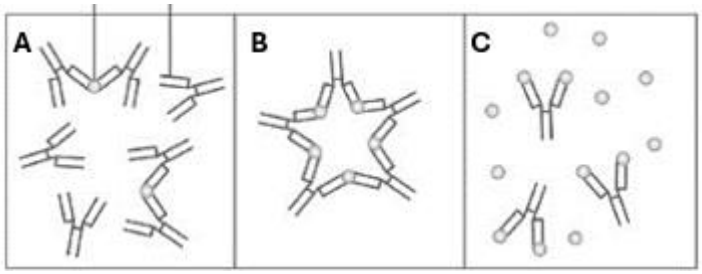
Course: Diagnostic Microbiology **Semester : IV**

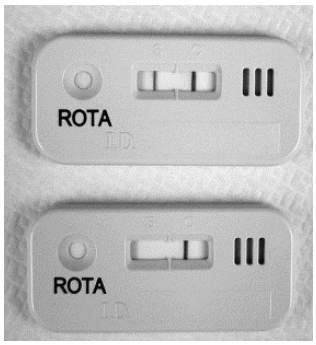
Program: BSc. Microbiology **Duration : 3 hours**

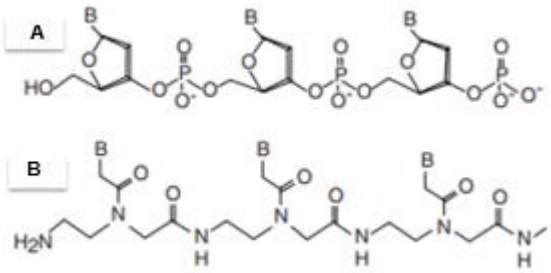
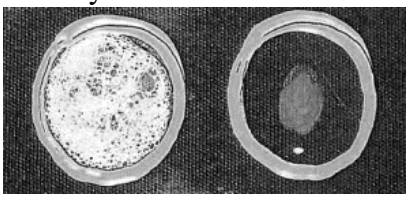
Course Code: HSMB2025 **Max. Marks: 100**

Instructions:

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Which of the following works the best for bacterial microscopy? a. 40X oil objective b. 100X oil objective c. 40X dry objective d. Any oil objective	**1.5**	**CO2**
Q 2	Name an enzymatic test to distinguish between aerobic and anaerobic organism.	**1.5**	**CO2**
Q 3	Which pathogen can be detected using Kinyoun acid-fast stain?	**1.5**	**CO2**
Q 4	Define thrombocytopenia.	**1.5**	**CO1**
Q 5	…… and …….. are fluorescent dyes used in diagnostic microbiology.	**1.5**	**CO1**
Q 6	What is Mc Conkey agar?	**1.5**	**CO1**
Q 7	Microbial count should be higher in florescent microscopy than in light microscopy. Comment on the statement.	**1.5**	**CO2**
Q 8	Identify the test shown below? 	**1.5**	**CO2**
Q 9	Differentiate the three zones A, B and C by writing what they refer to.	**1.5**	**CO2**

			
Q 10	Name two commonly used media for culturing fungus.	**1.5**	**CO1**
Q11	A compound microscope allows clear visualization of objects no smaller than a: A. DNA molecule B. Typical virus C. Large protozoa D. Small bacterium E. Human cells	**1.5**	
Q12	Identify the crucial label below? 	**1.5**	**CO2**
Q13	'There were 1000 measles cases aged 15-50 year old in 2019 in the US.' Comment what does 1000 cases refer to here as Incidence or Prevalence.	**1.5**	**CO2**
Q14	'Are fomites vehicle or vectors of diseases.' Comment on the statement.	**1.5**	**CO2**
Q15	Identify the microscopy which is suitable for *Treponema pallidum*. a. Bright field microscopy b. Electron microscopy c. Dark field microscopy d. Negative field microscopy	**1.5**	**CO1**
Q16	In an attempt to culture from a specimen; one finds growth on pH lower than neutral and on a starch media. Detect the pathogen which is likely to grow: a. Bacteria b. Viruses c. Fungus d. Protozoa	**1.5**	**CO1**
Q17	Alcohol is an anti-septic which can be used to clean surfaces as well as hands and arms. Identify the microbe against which it will work well or more efficiently	**1.5**	**CO1**

	A. Influenza virus B. Adenovirus C. Picorna virus D. Reoviruses		
Q18	'Are Viruses culturable?' Comment on the statement.	**1.5**	**CO1**
Q19	Name an automated instrument for bacterial identification and antibiogram pattern.	**1.5**	**CO1**
Q20	Differentiate between a probe and a primer.	**1.5**	**CO2**
	Section B **(4Qx5M=20 Marks)**		
Q 1	Identify the technique below and elaborate how such kits work?  	**5**	**CO2**
Q 2	a. From the above question Q1, can you envision difference between ELISA and this assay? (2) b. Discuss what are the analyte/(s) or molecule/(s) that can be detected using such kits and ELISA? (2) c. Write the full form of ELISA. (1)	**1.5**	**CO1**
Q 3	a. Enlist the specimens in which you would suspect normal microflora of body to be present? (2) b. Elaborate the principle of an Indole test?	**5**	**CO2**
Q 4	Write the procedure of WIDAL test used in diagnosis of typhoid. What kind of test is it?	**5**	**CO1**
	Section C **(2Qx15M=30 Marks)**		
Q 1	A few microlitres of patient sample is given and one wishes to apply a sensitive test to detect a pathogen. (i) Pick the method that should be preferred and why? (2) a. Biochemical b. Culture c. Molecular methods d. Microscopy (ii) Discuss the principle of hybridization. (3) (iii) If you have to culture the pathogen from this sample; suggest the precautions that will you take? (2) (iv) Define transport media? Enlist some and write composition of at least one. (2+3) (v) Enlist the transport media works the best for Vibrio? OR which is the most commonly used transport media for bacteria. (1) (vi) Differentiate between nosocomial infection and opportunistic infection. (2)	**15** **(2+3+2+5+1+2)**	**CO2**

Q 2	Hybridization techniques are rampant and used in multiple format in diagnostic microbiology. Below are two types of hybridization polymers; identify them, label them and answer the following.  1. Label the probes A and B, highlight the difference between them. 2. Analyse which of these would be more suitable to use for hybridization and why? 3. Given the sequence '5 – ATTTCCCGCGCGUA – 3'. Design a hybridization probe for it. 4. Elaborate the steps involved in hybridization. 5. Elaborate some molecular methods of detection of microbes? Explain any one.	**15 (2+2+2+3+ 6)**	**CO2**
Section D (2Qx10M=20 Marks)			
Q 1	Write in detail the principle, SOP/procedure of any one test for detection of viruses. What controls would you take to ensure your test is accurate.	**10 (6+4)**	**CO1**
Q 2	Discuss the principle of the following tests or identify the given test in picture and give examples of where they are used: I. Oxidase test II. Identify the test below and write its principle.  III. Differentiate between precipitation and flocculation tests. OR Differentiate between PCR and q-RT PCR.	**10 (2+3+5)**	**CO1**