

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 2 EXAMINATION- 2025

M.Sc. (Microbiology) - I Semester

COURSE CODE (CREDITS): 21MS1MB111 (3)

MAX. MARKS: 25

COURSE NAME: GENERAL MICROBIOLOGY AND BACTERIOLOGY

COURSE INSTRUCTORS: Dr. Rahul Shrivastava

MAX. TIME: 1 Hour 30 min

Note: (a) All questions are compulsory. (b) Calculators are NOT ALLOWED

Q. No.	Question	Marks
Q1.	A complex media has 16 cells/ml, with 2-hour lag phase and a 20 min generation time, how many cells would there be in 1 liter of the culture after i.) 2 hour ii) 3 hour iii) after 3 hours if four of the initial 16 cells died during lag phase.	[1+2+2 = 5]
Q2.	Provide suitable justification for the following statements: a. Antibiotic solutions are sterilized by filtration instead of Autoclaving. b. Copper Sulphate is used to kill algae in pools and fish tanks. c. Log phase cultures are usually used for testing of antimicrobial agents. d. Selective media inhibits growth of selected microorganisms.	[1.5 X 4 = 6]
Q3.	Discuss the 'Indirect' methods for microbial growth measurement with applications and examples.	[4]
Q4.	Case Study: A rural clinic uses UV irradiation to disinfect drinking water. However, several cases of gastrointestinal infections occur among patients and staff despite regular UV treatment. i. How does UV light inactivate microbes at the molecular level? ii. Suggest chemical methods that could complement or replace UV disinfection in this setting. iii. Design an experiment to test water disinfection efficacy using UV vs chlorine.	[1+2+3=6]
Q5.	Differentiate between obligate aerobes and facultative aerobes. Provide details of enzymes and biochemical reactions used by such bacteria for their survival.	[4]