

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSc
BRANCH: Biotech

SEMESTER : I
SESSION : MO/2025

SUBJECT: BT403 APPLIED MICROBIOLOGY

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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|--------|--|--------------|----------|
| Q.1(a) | Identify the different types of culture media and describe any <u>two</u> techniques used for measurement of microbial growth | [5] CO1; CO6 | 2,3, 4,5 |
| Q.1(b) | Determine the Chemical characteristics considered in wastewater analysis. Assess any <u>two</u> approaches used for identification of microorganisms | [5] | |
| Q.2(a) | Analyze the influence of any <u>one</u> environmental factor on microbial growth. Interpret the different phases of microbial Batch culture system | [5] CO2; CO6 | 2,3, 4,5 |
| Q.2(b) | Select and explain any <u>one</u> passive and <u>one</u> active nutrient uptake mechanism of microorganisms | [5] | |
| Q.3(a) | Evaluate any <u>one</u> air sampling technique. Determine the properties of 'Indicator organisms' utilized for sanitary analysis of water | [5] CO3; CO6 | 3,4,5 |
| Q.3(b) | Interpret the importance of Secondary treatment of wastewater giving <u>one</u> example. Classify the phytoremediation techniques | [5] | |
| Q.4(a) | Interpret the importance of beneficial plant-microbe interaction giving <u>one</u> example. Select and describe any <u>two</u> methods for safe storage of agricultural products | [5] CO4; CO6 | 2,3,5 |
| Q.4(b) | Determine the extrinsic factors which affect microbial growth in food. Choose and describe any <u>two</u> industrially important microorganisms | [5] | |
| Q.5(a) | Differentiate between bacterial toxins. Evaluate the importance of vaccines and classify them | [5] CO5; CO6 | 3,4,5 |
| Q.5(b) | Compare 'Passive' and 'Active' penetration of pathogen into the host body with a suitable example in each case. Determine the mechanism of action of any <u>one</u> antimicrobial drug | [5] | |

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