

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

CLASS: MSc  
BRANCH: BIOTECH

SEMESTER : I  
SESSION : MO/19

SUBJECT: BT403 APPLIED MICROBIOLOGY

TIME:3:00 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) i. Compare the different types of culture media. [5]  
ii. Identify and explain any two molecular approaches used for identification of microorganisms.
- Q.1(b) i. Can you identify the allergic disorders caused by air microflora? Compare the techniques used for air [5]  
sampling.  
ii. Identify and explain the techniques used for measurement of microbial growth.
- Q.2(a) i. Distinguish between Batch, continuous and fed-batch culture microbial systems. [5]  
ii. Interpret the effect of oxygen concentration and pH on microbial growth.
- Q.2(b) i. Classify and describe the mechanism of action of physical agents which control microbial growth. [5]  
ii. Identify and explain any one active transport mechanisms of nutrient uptake by bacteria.
- Q.3(a) i. What are 'indicator organisms'? Assess their role in sanitary analysis of water. [5]  
ii. Classify and describe the different steps of wastewater treatment process.
- Q.3(b) i. Assess the significance of bioleaching citing suitable examples. [5]  
ii. Define the term 'bioremediation'. Classify 'Phytoremediation'.
- Q.4(a) i) Identify the basic steps involved in establishment of plant-microbe symbiosis and contribution of this [5]  
association to plant functioning giving one example.  
ii) Evaluate the role of any two compounds derived from fungi responsible for biodeterioration of  
agricultural products.
- Q.4(b) i. Categorize the intrinsic factors responsible for microbial growth in food. [5]  
ii. Evaluate the importance of secondary metabolites from microorganisms citing two suitable  
examples.
- Q.5(a) i. Distinguish between exotoxins and endotoxins citing suitable examples. [5]  
ii. Interpret the importance of vaccines and classify them.
- Q.5(b) i. Categorize the steps accomplished in viral pathogenesis giving one example. [5]  
ii. Identify and explain the mechanism of action of any two antimicrobial agents.

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