

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

CLASS: IMSc
BRANCH: IFT

SEMESTER: II
SESSION: SP/19

SUBJECT: BE203 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) Answer any **one** of the following: [5]
i) Classify and explain the types of culture media used for microbial growth
ii) Identify and describe the physical methods used for sterilization
- Q.1(b) Answer the following: [5]
i) Select and explain any two molecular characteristics used for classification of microbes
ii) Analyze the features of gram staining
- Q.2(a) Identify the distinctive features and the classification of any **one** of the following: [5]
i) Archaeobacteria
ii) Fungi
- Q.2(b) Can you categorize and explain the phases of microbial growth curve in batch culture? Analyze the effect of temperature and oxygen on bacterial growth and classify them [5]
- Q.3(a) Answer any **one** of the following: [5]
i) What is the importance of 'bioaugmentation'? Discuss the three major outcomes possible on degradation of a pollutant
ii) Categorize and describe the steps involved in municipal water treatment
- Q.3(b) Identify the significance and major types of bioleaching citing one suitable example. Enlist any other **three** industrially important microbes with the products obtained. [5]
- Q.4(a) Explain in detail any **one** of the following: [5]
i) Significance of Mycorrhizae
ii) Role of Rhizobium in N₂ fixation
- Q.4(b) Select and describe the techniques for control of microorganisms for safe storage of agricultural food/products [5]
- Q.5(a) i) Enlist at least **two** microorganisms present as normal microbiota on the skin and in the stomach [5]
ii) Identify at least **three** bacterial diseases along with their causative organisms
- Q.5(b) Answer any **one** of the following: [5]
i) Select and explain any **two** nonspecific defense mechanisms of host against infection
ii) Distinguish between exotoxins and endotoxins. Categorize the approaches of microbial adherence to the host for initiation of infection citing suitable examples

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