

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

CLASS: MSc
BRANCH: BIOTECHNOLOGY

SEMESTER : III
SESSION : MO/18

SUBJECT: SBT3003 ENVIRONMENTAL BIOTECHNOLOGY

TIME: 3.00 HOURS

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 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) Categorize the biological systems used for monitoring pollution citing suitable examples. [6]
Q.1(b) Answer the following: [6]
i) Components of microbial fuel cells and its significance
ii) Identify and explain the third generation of biofuels with suitable examples
- Q.2(a) Identify and explain the *in situ* and *ex situ* microbial bioremediation techniques citing suitable examples in each case. [6]
Q.2(b) Distinguish between the following techniques used for bioremediation citing suitable examples: [6]
i) Bio-augmentation and bio-stimulation
ii) Phytoextraction and Phytodegradation
- Q.3(a) Categorize and explain the different mechanisms of bioleaching with suitable examples. [6]
Q.3(b) Identify the various bacterial metal leaching techniques. Explain in detail the bioleaching process of any one metal. [6]
- Q.4(a) Identify the essential prerequisites for microorganisms to be used as SCP. Explain the production steps citing one suitable example. [6]
Q.4(b) Explain the following citing one suitable example in each case: [6]
i) Importance of probiotic and prebiotic
ii) Significance of microbial production of flavors and steps involved in the process
- Q.5(a) Identify and explain the different mechanisms of biological control of plant pathogens citing suitable examples. [6]
Q.5(b) Describe the features one bacterial and one viral plant pathogen and the disease causing mechanism in each case. [6]
- Q.6(a) Determine the different components of a biosensor. Also explain its advantages and limitations. [6]
Q.6(b) Classify any three biosensors based on the transducer principles citing suitable examples in each case. [6]
- Q.7(a) Identify the salient features of the following types of intellectual property: i) Patents ii) Trademarks [6]
Q.7(b) Assess the importance of Traditional Knowledge Digital Library (TKDL) citing suitable examples. [6]

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