



Name :

Roll No. :

Invigilator's Signature :

CS/B.Sc (H), BT/SEM-5/IBT-504/2009-10

2009

INDUSTRIAL BIOTECHNOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

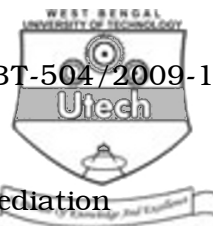
*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10
- i) Single celled protein is also provides
 - a) non-essential amino acid
 - b) all protein
 - c) essential amino acid (lys, met)
 - d) no proteins.
 - ii) Bubbles are created by spurger and broken by
 - a) air
 - b) impeller
 - c) both of these
 - d) none of these.
 - iii) Penicillin production is an
 - a) anaerobic process
 - b) aerobic process
 - c) long process
 - d) little oxygen needed.

- <http://www.makaut.com/>



- xi) *Pseudomonas putida* is used for
- a) bioaugmentation b) bioremediation
 - c) bioleaching d) biopesticides.
- xii) Size of the particle separated in ultrafiltration is
- a) 0.001 — 1 mm b) 0.02 — 2 μ m
 - c) 0.001 — 10 μ m d) 0.001 — 0.1 μ m.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 \times 5 = 15

2. a) What are the disadvantages of microbial enzyme production ?
- b) How are the alginate beads formed in the process of cross-linking ? $2\frac{1}{2} + 2\frac{1}{2}$
3. Describe the industrial application of immobilized enzymes. 5
4. Write short notes on any *one* of the following :
- a) fluidized bed bioreactor
 - b) airlift bioreactor. 5
5. Write the advantages of bioleaching. 5
6. What are the advantages and disadvantages of single cell protein ? $2\frac{1}{2} + 2\frac{1}{2}$

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GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. Describe the methods of improvement of industrially important microbial cultures. What are the different steps of industrial fermented product recovery ? $7\frac{1}{2} + 7\frac{1}{2}$
8. What are the different methods of enzyme immobilization ? Briefly describe each of the methods. What are the specific advantages of enzyme immobilization ? $1 + 9 + 5$
9. a) Explain composting and its mechanisms.
b) What is vermicomposting and its advantages ?
c) Why are microbes the scavengers in bioremediation (give example) ?
d) What are the four major processes under the tertiary treatment. $5 + 3 + 2 + 5$
10. a) Describe the process of monoclonal antibodies by *E.coli*.
b) How is it important for the treatment of cancer cells ? $10 + 5$
11. a) What is the source of energy in our universe ?
b) Write a short note on energy rich crops.
c) Describe the production of Biomethane with proper diagram and biochemical reactions. $2 + 3 + 10$

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