

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For the following qualifications :-

M. Sc.

Biochem Eng G24: Integrated Biochemical Engineering Design

COURSE CODE : **BENGE24**

DATE : **10-MAY-02**

TIME : **10.00**

TIME ALLOWED : **3 hours**

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UNIVERSITY OF LONDON

Biochemical Engineering

G24

*Answer the question in SECTION A and two questions from SECTION B.
ALL questions carry marks as indicated []*

SECTION A

1. Your company wishes to use an E.coli expression system for the production of a highly labile protein of about 100,000 MW. The protein is expressed within the periplasmic space but this route is not 100% efficient and early trials show that product appears in the fermenter supernatant before harvest. Production scales of 10,000 L fermentation are anticipated.

Provide reasoned arguments for the selection of appropriate recovery trains based on this expression system. Your answers should include flowsheets with full equipmental details and key operating characteristics so as to describe fully the alternatives. You should comment on expected yields and ease of operation.

The final analysis should result in a recommendation for the most suitable process flowsheet to be adopted.

[50]

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SECTION B

2. Describe the key issues for developing a successful marketing strategy in the life sciences market and use an appropriate example to illustrate your points in detail. [25]
3. Answer all parts:
- a) What are the requirements of a patentable invention? Illustrate your answer by using an example in the life sciences sector. [10]
 - b) What are the grounds for revocation of a patent? Illustrate your answer by using an example in the biotechnology sector. [10]
 - c) How can you protect a software? Comment on the robustness of the protection. [5]
4. What key issues should be considered when undertaking the preliminary technical and commercial evaluation of an idea in the biopharmaceutical sector? [25]

END OF PAPER