

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:–

M.Sc.

Biochem Eng G24: Integrated Biochemical Engineering Design

COURSE CODE : **BENGE24**

DATE : **14-MAY-04**

TIME : **10.00**

TIME ALLOWED : **3 Hours**

*Answer TWO questions from PART A and the question in PART B.
Only the FIRST THREE ANSWERS will be marked. Marks are distributed as shown [].
Answer each section in a separate answerbook.*

Part A

1. Describe the major components of a business plan written in the life sciences industry using an example. [25]
2. Describe what is meant by outsourcing. [5]
In the biotechnology sector, what different types of activities can be outsourced? [5]
Describe the benefits and drawbacks of outsourcing. [15]
3. To assess the value of a company in the health sector describe in detail the quantitative and qualitative tools which you can use. [25]

Part B

4. “The presence of interactions within bioprocesses need to be accounted for if reliable predictions from process models are to be realised.”
To what extent do you think this statement is valid? [10]
Use the example of a fed batch fermentation of a recombinant organism expressing an intracellular product and providing the feed for a sequence of downstream process operations. Show how biochemical engineers now have the tools necessary to analyse and to handle such design and operation problems. [15]
Taking the example of a centrifuge provide brief notes as to how one might assess the suitability of the operation early in the development of a process where the amount of material is strictly limited. [25]

END OF PAPER