

**UNIVERSITY COLLEGE LONDON**

University of London

**EXAMINATION FOR INTERNAL STUDENTS**

For The Following Qualification:–

**Biochemical Eng E184: Integrated Biochemical Engineering Design**

**COURSE CODE : BENGE184**

**UNIT VALUE : 0.50**

**DATE : 03-MAY-05**

**TIME : 10.00**

**TIME ALLOWED : 3 Hours**

Answer **TWO QUESTIONS** from **PART A**, and the question in **PART B**.

**Part A**

1. What are the financial 'exit routes' available to refund venture capitalists financing a company in the life sciences in the UK and the U.S. Explain the advantages and the disadvantages of each. [25]
2. What are the major factors influencing the healthcare market worldwide? Give reasons and illustrate your answer with examples. [25]
3. Give details of development pathway and regulatory hurdles for a biological therapeutic drug, including timescales in the UK. [25]

**Part B**

1. How would you evolve a suitable specification for a repeat high dose protein derived from *E. coli*? [15]  
How would the process sequence used to deliver this product differ to one for the same product but now derived from a mammalian cell source? [15]  
How might you contemplate using scale-down and modelling tools to assist in arriving at your final design solution? [20]  
*(You might care to take a couple of unit operations as examples to demonstrate your understanding of the concepts here.)*

**END OF PAPER**