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**THE BRITISH COMPUTER SOCIETY**  
**THE BCS PROFESSIONAL EXAMINATION**  
**Diploma**

**SYSTEMS ANALYSIS**

20<sup>th</sup> April 2000 - 10:00a.m. - 12:00p.m.

QUESTION 1 is mandatory and receives 50% of the total marks available for this paper.  
Candidates may select TWO of the remaining FOUR questions.  
Time: TWO hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. Millennium Estates (ME) is a fast growing property management company whose core business is the sale and rental of properties. The new manager wants to introduce some computer support to the sale and letting process to make it more efficient in matching properties to likely customers. The activities that support the main processing are described by one of the staff as follows:
- A property owner contacts ME to discuss their requirements. A check is made in the diary and an appointment time is agreed and made. Once the visit has taken place the Property Consultant returns to ME with the property particulars and, hopefully, the signed agreement. Sometimes the property owner will hold the agreement for a short time before signing and returning it to ME. Once the signed agreement is back at ME the property account is created with details of both the property and the contract terms being recorded.
- As soon as a new instruction is received a search takes place through the existing files of potential buyers or tenants and a targeted mail-shot then takes place.
- When someone wants to view a property an appointment is made for the Property Consultant to accompany the viewer. A record of each viewing is kept with the details of the date, property visited, Property Consultant, potential customer details and an indication of outcome.
- Once a sale or rental is agreed, the details are passed over to the Sales Administration team to manage the sale through to completion, or to the Letting Management Division.
- a)* Produce a 'Top Level Logical Required Systems DFD' model to support the processing requirements outlined above. **(20 marks)**
- b)* Produce an Entity-Relationship diagram and skeleton tables (i.e. tables that include primary and foreign keys only) for the required system. **(20 marks)**
- c)* What are Entity Life Histories and how do they assist in the checking of the validity of the process (DFD) and data (ERD) models? Illustrate your answer with reference to the models created in answer to parts *a)* and *b)* of this question. **(10 marks)**
2. *a)* Identify the people other than development personnel who may be involved in an Information Systems Development project. **(8 marks)**
- b)* Explain the importance of involving user groups in an Information Systems Development project. Discuss, with reference to any appropriate methodologies, some of the ways in which their involvement can be achieved. **(17 marks)**

**[Turn over**

3. a) Explain briefly what is meant by a 'hard' and by a 'soft' approach to systems development, providing an example of a methodology of each type of approach. **(6 marks)**
- b) Discuss the disadvantages of using only a 'hard' or 'soft' methodology and examine any proposals that have been made to overcome these drawbacks. **(19 marks)**
4. Write brief notes on each of the following:
- a) Traditional (waterfall) life cycle **(6 marks)**
- b) Rapid Application Development **(6 marks)**
- c) Rich Pictures **(6 marks)**
- d) Class Diagrams (as used in object-oriented approaches) **(7 marks)**
5. Explain the ways in which the quality of a software system can be assured during the systems development process. Describe the contribution that Computer Aided Software Engineering (CASE) tools can make towards software quality. **(25 marks)**