

**BCS THE CHARTERED INSTITUTE FOR IT**

BCS HIGHER EDUCATION QUALIFICATIONS  
BCS Level 6 Professional Graduate Diploma in IT

**SYSTEM DESIGN METHODS**

**Monday 26<sup>th</sup> March 2018 - Afternoon**

Answer **any** THREE questions out of FIVE. All questions carry equal marks.

Time: THREE hours

**Answer any Section A questions you attempt in Answer Book A**

**Answer any Section B questions you attempt in Answer Book B**

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

Calculators are <b>NOT</b> allowed in this examination.
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**Section A**  
**Answer Section A questions in Answer Book A**

**A1**

**Basic Elements of System Design Methods**

- a) Give THREE arguments for using systems modelling. **(6 marks)**

- b) What are State Transition Diagrams (STDs) and what aspect of information systems do they model?

Produce a STD for entity X whose instances are created by event Ev1, updated by event Ev2, and deleted by event Ev3. Please note that Ev2 can affect an instance of X several times.

**(10 marks)**

- c) There are different approaches to software prototyping. Explain, with the aid of diagrams the differences between throw away prototyping and evolutionary prototyping. Which approach to prototyping can be 'merged' with the waterfall software life cycle model and how?

**(9 marks)**

**A2**

**Construction of a Method**

- a) A smartphone app designer intends to develop a system design method for smartphone apps. Discuss what design techniques could be used to design the following aspects of smartphone apps:

i) The user interaction with the smartphone app; **(5 marks)**

ii) The layout of the screens for the smartphone app; **(5 marks)**

iii) The detailed logic of the smartphone app. **(5 marks)**

- b) Consider a web developer who develops interactive educational websites for young children. Discuss what types of design techniques would be appropriate for developing interactive educational websites.

**(10 marks)**

### **A3**

#### **Selecting a Method**

- a) Compare the advantages and disadvantages of using object oriented and structured methods for administrative systems such as payroll.  
(10 marks)
- b) Discuss the criteria that would support the selection of a formal systems development method for an organisation.  
(15 marks)

**Section B**  
**Answer Section B questions in Answer Book B**

**B4**

**Introducing a Method**

- a) An IT organisation has decided to introduce a new system development method for use in various projects.

Identify possible problems and risks which may affect the introduction of the new method and the measures that could be adopted to avoid these problems and risks.

**(15 marks)**

- b) A large company has used a traditional structured method for many years. This method is to be 'replaced' by DSDM (an agile method). Produce a plan of action for introducing DSDM. Discuss briefly at least FIVE actions which should be included in the plan.

**(10 marks)**

**B5**

**Evaluation and tuning of a method**

- a) Give TWO (or more) reasons for comparing and evaluating systems design methods.

**(4 marks)**

- b) Outline how an organisation could attempt to assess the benefits obtained through introducing a new systems design method.

**(10 marks)**

- c) Consider the following criteria that might be used in assessing systems development methods:  
life cycle coverage, project management support techniques,  
documentation standards, improved quality of products, design for  
change, visibility of product, code generation facility.

Discuss, giving appropriate arguments, which criteria are suitable and which are not suitable for the above purpose.

**(11 marks)**

**END OF EXAM**