UNIVERSITY OF BOLTON

CREATIVE TECHNOLOGIES

BSc (HONS) COMPUTING

SEMESTER TWO EXAMINATION 2018/2019

SYSTEMS ANALYSIS AND DESIGN

MODULE NO: CPU5006

Date: **Thursday 23rd May 2019**   Time: **10:00 – 12:00**

INSTRUCTIONS TO CANDIDATES: **There are EIGHT Questions**
Answer FIVE Questions.

Marks for parts of questions are shown in bold.

Unless otherwise stated all symbols take their usual meaning.

Electronic calculators may be used provided that data and program storage memory is cleared prior to the examination.

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Q1 Software Development Life Cycles

1. Describe the four core phases of the System Development Life Cycle and their associated phase deliverables **(8 Marks)**

2. Identify the project characteristics that would lead you to recommend the following software development methodologies.
   a. Scrum
   b. Throwaway prototype
   c. Waterfall **(6 Marks)**

3. Identify how the following artefacts are used in Systems Analysis
   a. Gantt Chart
   b. Work Breakdown Structure
   c. Network diagram **(6 Marks)**

Q2 System Representation

1. Compare the types of event flow within a use-case. **(3 Marks)**

2. Identify the five main elements in an activity diagram and state their purpose. **(10 Marks)**

3. Identify three different representations for the functional model of a system and describe a set of rules that ensure consistency between the three models **(7 Marks)**

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Q3 Application Architectures

1. Identify the advantages and disadvantages of the three principal application architectures in use today. **(9 Marks)**

2. Compare and contrast cloud computing and ubiquitous computing **(5 Marks)**

3. Describe three major factors in selecting hardware and software. **(6 Marks)**

Q4 Data Management

1. Discuss the major approaches to object persistence within data storage design. **(10 Marks)**

2. Identify appropriate strategies to optimise data access speed **(5 Marks)**

3. Describe effective strategies for efficient data storage **(5 Marks)**

Q5 Class and Method design

1. Discuss class and method design validation protocols. **(4 Marks)**

2. Compare and contrast the class design concepts of coupling, cohesion and connascence. **(6 Marks)**

3. Identify the major stages of the object design process **(6 Marks)**

4. Describe the four main characteristics of object-oriented design. **(4 Marks)**

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Q6 Verification and Validation

1. Describe the major steps required to evolve an analysis model into a design model. **(5 Marks)**

2. Discuss the relevance of UML package diagrams in the design of a software system. **(3 Marks)**

3. Compare and contrast custom development, packaged software and outsourcing as viable software acquisition strategies. **(12 Marks)**

Q7 Fundamental HCI Design principles

1. Discuss 5 relevant design principles for User Interface design **(10 Marks)**

2. Identify the basic design principles for
   a. Navigation
   b. Input
   c. Output **(6 Marks)**

3. Describe how international and cultural issues influence User Interface design **(4 Marks)**

Q8 Design Evolution

1. Discuss the how the following techniques are used in the transitioning of a system design into an appropriate solution.
   a. Factoring
   b. Partitioning
   c. Layers **(10 Marks)**

2. Identify the strengths and weaknesses of the three major design strategies to provide system solutions. **(10 Marks)**

END OF QUESTIONS