THIS PAPER IS NOT TO BE REMOVED FROM THE EXAMINATION HALL

UNIVERSITY OF LONDON

CO3353 ZB

BSc EXAMINATION

COMPUTING AND INFORMATION SYSTEMS and CREATIVE COMPUTING

Software Engineering Project Management

Friday 17 May 2019: 10.00 – 12.15

Time allowed: 2 hours and 15 minutes

DO NOT TURN OVER UNTIL TOLD TO BEGIN

There are **FIVE** questions on this paper. Candidates should answer **THREE** questions. All questions carry equal marks and full marks can be obtained for complete answers to **THREE** questions. The marks for each part of a question are indicated at the end of the part in [ ] brackets.

Only your first **THREE** answers, in the order that they appear in your answer book, will be marked.

There are 75 marks available on this paper.

Calculators are not permitted in this examination.

Question 1

Read the following scenario and then answer the questions below.

You are the software engineering project manager in a large retail organisation. The organisation has decided to develop an Integrated Service System (ISS). The ISS will integrate three existing standalone databases. The first of these databases is the inventory control system (ICS) that details the organisation's inventory in real time. The second is the Customer Order System (COS) that allows customers to configure and define their orders on line. The third system is the PAM system that allows payment to be made securely on line. These payments may be received from either customers or other business partners.

The Senior Management in the organisation state that the system should be operational within 24 months and provide the required business information within 30 months. The organisation is anxious about this development as they are not technically sophisticated and do not have experience in defining their requirements or in developing new systems.

a) As the software engineering project manager responsible for this development, identify the software engineering lifecycle model you would choose to develop this system.

[3 marks]

b) Discuss why you would choose the model you have identified in your answer to question 1a) above.

[10 marks]

c) Discuss **FOUR** difficulties that may be encountered in the requirements elicitation process for this project.

[12 marks]

Question 2

a) A good software engineering project manager recognises the importance of keeping members of their staff motivated. One approach to keeping staff motivated is to identify their needs and satisfy these needs. Abraham Maslow (1943) suggested a hierarchy of needs that may be used to help identify people's motivations.

Discuss Maslow's Hierarchy of needs.

[10 marks]

b) Discuss what actions a manager could take to ensure that the needs of their staff that are identified at each level of Maslow's hierarchy are met.

[10 marks]

c) The academic literature suggests that an individual's personality type might also influence their motivation. Bass and Dunteman (1963) classify professionals into three personality types, namely, task-oriented people, self-oriented people and interaction-oriented people.

For each of the three personality types mentioned above, identify a way in which a person having that personality type might be motivated.

[3 marks]

d) Define what is meant by the People Capability Maturity model.

[2 marks]

Question 3

a) When deciding whether or not to use Universal Modelling Language (UML) graphical models during architectural design, the software engineer needs to consider five issues. Identify the **FIVE** issues that need to be addressed.

[5 marks]

b) Describe what each of the following diagrams used in UML represent and provide an illustrative diagram of each:

Activity diagrams
Use case diagrams
Sequence diagrams
Class diagrams
State diagrams.

[15 marks]

c) Critically access the value of developing architectural models.

[5 marks]

Question 4

a) Software development is described in your subject guide as a 'difficult job'. Briefly discuss three major sources of risk in software development that may add to the difficulty of the job.

[9 marks]

b) At the beginning of the RMMM process, the information available about risks is somewhat arbitrary and has to be made more accurate as the project evolves (and the proximity of the risk gets closer). One technique is to identify indicators of change in risk status – a high rate of test failures is one likely indicator that something is about to go seriously wrong. The PMBOK® identifies six elements to the Monitor and Control Process. Identify and discuss these elements.

[12 marks]

c) Briefly discuss the meaning of the term risk register.

[4 marks]

Question 5

a) A commonly used process model in software development is the Spiral Model developed by Boehm (Boehm, 1988). Discuss 3 essential characteristics of the Spiral Model.

[9 marks]

b) Formal documentation is critical to good software project management. Discuss some of the principals of good project document management.

[8 marks]

c) Quality assurance is a continuous activity. Discuss 4 activities that are typically included in a quality assurance activity.

[8 marks]

END OF PAPER