

B5.

A local Web Application Development Company, DesignStar, has recently considered moving their infrastructure to the Cloud. Their current infrastructure is no longer valid for what they need and is at breaking point. They have been looking into the benefits of Infrastructure as a Service (IaaS) but are not really sure whether to go ahead or not. They develop software for multiple operating systems to cope with different user bases.

- a) As a consultant you have been tasked with advising DesignStar on the suitability of Infrastructure as a Service.

Write a concise report for DesignStar which specifically addresses the following requirements:

- Suitability for planned growth in the next few years. They are hoping to significantly increase their market and to open new premises in Dublin.
- Modelling Virtual Machines and desktops.
- Security and configuration of web services.
- Storage of Data files, particularly sensitive data, DesignStar currently uses SharePoint.

(20 marks)

- b) You feel it would be beneficial for them to extend the move to the cloud to their development environment. Write a summary of the advice you would give, promoting Platform as a Service (PaaS).

(5 marks)

END OF EXAMINATION

BCS THE CHARTERED INSTITUTE FOR IT

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

SOFTWARE ENGINEERING 2

Tuesday 8th October 2024 – Morning

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 **NOT** allowed in this examination.

Section A
Answer Section A questions in Answer Book A

A1.

- a) Explain **four** reasons why a software system that is used in a real-world environment must change over time or become progressively less useful.

Provide examples to support and justify your answer.

(12 marks)

- b) As a software project manager in a company that specialises in the development of software for the travel industry, you have been given the task of discovering the factors that affect the maintainability of the systems developed by your company.

Discuss how you would set up a programme to analyse the maintenance process and select appropriate maintainability metrics for your company.

In your discussion you should identify and explain **five** maintainability metrics that you might consider.

(13 marks)

A2.

- a) Define what is meant by open-source software and explain the principles of open-source development.

(5 marks)

- b) Discuss **five** advantages **or** disadvantages of making use of open-source software in production environments.

In **each** case illustrate your answer with an example of open-source software that may be used, together with a proprietary alternative.

(20 marks)

Section B
Answer Section B questions in Answer Book B

B3.

- a) "Software Process Improvement" can improve the speed, quality, and success of a software development project.

Select a Process Improvement standard of your choice and outline its purpose and key components.

Explain how the specific principles, activities and/or phases from your chosen standard can be applied to enable ...

- development speed to be improved.
- quality of the product to be improved.
- efficiency of software engineering practices to be achieved.

(15 marks)

- b) As a project manager you want to implement a Software Process Improvement framework for future development projects. However, the management are resistant to this due to the costs and time involved.

Discuss how implementing a Software Process Improvement framework/model/standard such as CMM-I would benefit the organisation as a whole.

Illustrate your answer with points from a specific framework/model/standard.

(10 marks)

B4.

- a) You have just been recruited as a project manager in a new organisation. You find that the project to which you have been assigned is behind schedule.

As the project manager, discuss the approach you would use to address the situation.

You should explain the procedures you could put in place to ensure the project is successful and delivered on time.

(10 marks)

- b) Within this project you notice that the development team are not working well together. This is causing major problems within the development of the project and is contributing to it being behind schedule.

Explain, with reasons, **three** actions you would take to ensure the team works efficiently and effectively.

(6 marks)

- c) Discuss how a project management planning tool such as Jira or Trello helps to manage development teams using agile methodologies such as scrum or kanban.

(9 marks)

[Turn Over]