

BCS THE CHARTERED INSTITUTE FOR IT

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

SOFTWARE ENGINEERING 2

Friday 17th April 2026 – 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) An important aspect of open-source software is the license conditions. Discuss **three** commonly used open-source licenses, clearly identifying **one** advantage and **one** disadvantage of **each**.
(9 marks)
- b) A small company has developed a specialised product that is specially configured for each customer. New customers usually have specific requirements to be incorporated into their system and they pay for these to be developed. The company has an opportunity to bid for a new contract, which would more than double its customer base. The new customer also wishes to have some involvement in the configuration of the system.

Explain **three** reasons why, in these circumstances, it might be a good idea for the company owning the software to make it open-source.
(16 marks)

A2.

- a) Explain what is meant by impact analysis when considering software maintenance.
(6 marks)
- b) Discuss **five** key activities involved when performing software maintenance impact analysis.
(10 marks)
- c) Explain **three** reasons why impact analysis is important in software maintenance.
(9 marks)

A3.

- a) A development team is unsure whether to use the waterfall model for a new project. You know that this project has a high or moderate risk of requirements changing. You are asked to give advice on the use of the waterfall model for this project.

Explain clearly, with reasons, under what conditions the waterfall model is suitable and your recommendation.

(5 marks)

- b) Agile methodology is said to work better for larger projects which are more complex, such as a healthcare system within a hospital.

Discuss **five** areas in relation to the values and principles of an agile approach which you should follow when developing a new system. You are **not** required to state the values and principles.

(10 marks)

- c) Evaluate why the evolutionary model may be a good choice for the development team to use when implementing an Artificial Intelligence (AI) system, such as maps and navigation. You may select a different AI project of your choice.

You **must** use examples from your chosen AI project to highlight each point within your evaluation.

(10 marks)

[Turn Over]

Section B
Answer Section B questions in Answer Book B

B4.

A new development company, Code-Ers, has been established and has created their first three projects. There are 10 members in the development team.

These first projects have been mostly successful; however, some areas were not implemented as fully as they had anticipated and two of the projects ran over time and budget. The management feel that improvements could have been made within the overall development process and they would like to explore this in some detail.

a) Discuss why:

i. There could be a need for software measurement for Code-Ers.
(5 marks)

ii. Software measurement would be a useful tool in ensuring that Code-Ers can make improvements in their current and new developments over the coming years.
(10 marks)

b) Advise how the management can put software measurement in place and the metrics they could use. You should include consideration of methods or techniques and their advantages and disadvantages within your answer.
(10 marks)

B5.

a) Component-based software engineering relies on the reuse of entities called software components. The following are five characteristics of a single reusable software component:

- i. Standardised.
- ii. Independent.
- iii. Composable.
- iv. Deployable.
- v. Documented.

For **each** characteristic, discuss how they contribute to developing a single reusable software component.

(25 marks)

END OF EXAMINATION