

BCS Level 3 Certificate in Programming QAN 603/1192/7

Sample Paper A

Record your surname / last / family name and initials on the answer sheet.

Sample paper only 40 multiple-choice questions – 1 mark awarded to each question.
Mark only one answer to each question. There are no trick questions.

A number of possible answers are given for each question, indicated by either **A. B. C. or D.** Your answers should be clearly indicated on the answer sheet.

Pass mark is 26/40.

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This qualification is regulated by Ofqual (in England).

- 1** Which of the following statements is CORRECT?
- A** Compiled code must be translated before a machine can use it.
 - B** Interpreted code can be executed directly by the computer's CPU.
 - C** Compilers translate code at run-time into machine instructions.
 - D** Interpreted code must be translated into machine instructions.
- 2** Which type of algorithm has been used to order the list [7, 5, 2, 9] based on the following steps?
- 1) [7, 5, 2, 9]
 - 2) [5, 7, 2, 9]
 - 3) [5, 2, 7, 9]
 - 4) [2, 5, 7, 9]
- A** Bubble sort.
 - B** Merge sort.
 - C** Shell sort.
 - D** Random sort.
- 3** Which of the following describes the concept of a software design pattern?
- A** The change of a coding structure.
 - B** A step-by-step process for performing an important activity.
 - C** A re-usable solution that aids the development of software.
 - D** A throwaway design solution.
- 4** What is 'user research' an activity of?
- A** Requirements analysis.
 - B** Feasibility study.
 - C** Project planning.
 - D** Implementation (Deployment) planning.

5 Which of the following roles compiles, assembles and delivers source code into finished products?

- A** Software tester.
- B** Software developer.
- C** Software designer.
- D** Software release engineer.

6 Which of the following provides a target against which the performance of operational software is measured?

- A** Non-functional requirement.
- B** Service level.
- C** Retrospective meeting.
- D** Functional test specification.

7 A software developer has been asked by their manager to review the code of another developer.

What aspect of team working does this activity illustrate?

- A** Decision making.
- B** Collaboration.
- C** Conflict resolution.
- D** Planning.

8 What is a functional requirement?

- A** The robustness that the software needs to adhere to.
- B** How quickly program code is successfully tested.
- C** The purpose that the software is intended to perform.
- D** How well the features of the software perform.

- 9 Which of the following are non-functional requirements?
- a) The required hours of service for the software.
 - b) The ease with which the software needs to be used.
 - c) The manner in which the software needs to interface with other software.
 - d) The ease with which the software needs to be maintained.
 - e) The maximum time allowed to recover the software after failure.
- A** a, b and c only.
B b, d and e only.
C b and c only.
D a, d and e only.
- 10 Which of the following are **TYPICAL** outcomes of poor software requirements?
- a) Late product delivery.
 - b) Low product quality.
 - c) Excessive rework.
 - d) Inflexible software architecture.
- A** a, c and d only.
B a, b and c only.
C b, c and d only.
D a, b and d only.
- 11 Which type of constraint ensures that software conforms with the Data Protection Act?
- A** Legal.
B Governance.
C Business.
D Ethics.
- 12 Which of the following is **TYPICALLY** captured as part of a persona?
- A** Curriculum Vitae.
B Motivations and frustrations.
C Generalised demographics.
D Personal responsibilities.

- 13 Which NoSQL database is **TYPICALLY** the **MOST** efficient for the storage and retrieval of densely connected, semi-structured domains?
- A Column store.
 - B Graph.
 - C Key-Value.
 - D Document.
- 14 What is the **PRIMARY** aim of normalising a database?
- A Removing any tables with similar data.
 - B Scanning a database and removing slack space.
 - C Ensuring that data is not duplicated in multiple tables.
 - D Editing the database to remove duplicate column names.
- 15 What is the impact of adopting coding standards?
- A It greatly increases productivity.
 - B It provides a standard way of working.
 - C It increases workload for the development team.
 - D It will be easier to plan appropriate tests.
- 16 When defining a new set of coding guidelines for a project, what is the **BEST** approach to take?
- A Let them evolve during the first few project iterations.
 - B Dictate a comprehensive set of rules from the start.
 - C Let senior management decide on the conventions.
 - D Dictate that all code must be commented.
- 17 Which of the following is a purpose of running a usability test?
- A To check whether the application's database is easy to access.
 - B To identify any changes required to improve user performance and satisfaction.
 - C To identify whether the application meets the Web Accessibility Initiative (WAI) standards.
 - D To connect the application's information architecture to its visual design.

- 18** Which is a fundamental consideration for people with disabilities as defined by the Web Accessibility Initiative (WAI)?
- A** Text can be reduced in a visual, oral or physical way.
 - B** Every feature must be capable of working by keyboard input alone.
 - C** Maximise compatibility with current and future user tools.
 - D** Audio volume can be adjusted with voice control.
- 19** What is the practice of defensive programming?
- A** Ensuring all source code is comprehensively commented to allow for easy transition between developers.
 - B** Anticipating failures by adding supporting code to detect, isolate, and if possible recover from the failure.
 - C** Planning and creating a software architecture that implements and enforces security policies in software code.
 - D** Defining a set of rules for naming and declaration rules for classes, methods, variables and functions.
- 20** Which of the following is a purpose of penetration testing?
- A** To identify whether a system has been properly configured.
 - B** To test if a system meets non-functional requirements when used to full capacity.
 - C** To test if the infrastructure is robust enough to meet system demands.
 - D** To test whether a system is capable of being easily hacked.

21 The following describes a line of code in a program:

Result = Test1 XOR Test2

Which of the following values of Test1, Test2 and Result would be CORRECT when applying this code?

A

Test1	Test2	Result
TRUE	TRUE	TRUE
FALSE	TRUE	TRUE

B

Test1	Test2	Result
TRUE	TRUE	TRUE
FALSE	TRUE	FALSE

C

Test1	Test2	Result
TRUE	TRUE	FALSE
FALSE	TRUE	TRUE

D

Test1	Test2	Result
TRUE	TRUE	FALSE
FALSE	TRUE	FALSE

22 What is the following code an example of?

```
While condition  
[ statements ]  
End While
```

A Selection.

B Iteration.

C Polymorphism.

D Refactoring.

23 What is the following an example of?

```
['123.4', '824.0', '5186']
```

A A list of strings.

B A list of numbers.

C Floating numbers.

D An array of variables.

- 24 In TDD what is the **first** code that is written?
- A Unstructured.
 - B Functional.
 - C Test.
 - D Structured.
- 25 Which of the following would feed directly into the design stage of a software development project?
- A Proposed language.
 - B Requirements.
 - C Testing.
 - D Platform.
- 26 What immediately follows the design phase of software development?
- A Requirements gathering.
 - B Testing.
 - C Feasibility study.
 - D Code development.
- 27 Why are software development activities often governed by projects?
- A To provide a suitable development methodology to achieve the stated goal.
 - B To provide a tool for assuring the quality of the software end-product.
 - C To provide a framework for planning and managing the development towards the end goal.
 - D To ensure that software development follows recognised coding and testing standards.
- 28 What is the **MOST** effective approach to adopt for a requirements validation?
- A Examine the system model for defects.
 - B Have a team member review the requirements.
 - C Add more unit tests to cover the requirements.
 - D Use a checklist of questions to examine each requirement.

- 29** Which of the following is the **MOST** clear and complete definition of a non-functional requirement?
- A** The software needs to be secure from external threats in order to ensure complete confidentiality of data.
 - B** The software is required to be available at all times, except for up to 2 hours per month between the hours of midnight and 6 am GMT.
 - C** The software must be capable of being used by a high volume of users.
 - D** The software should be updated regularly with corrections for errors and with any new functionality requirements identified.
- 30** Which of the following is **NOT** a method of measuring test coverage?
- A** Aesthetics.
 - B** Feature.
 - C** Scenario.
 - D** Instrumentation.
- 31** Which of the following is the **MOST** important consideration when developing an application?
- A** Ensure the code is fully commented.
 - B** Always being mindful of non-functional requirements.
 - C** Ensuring the code is fully optimised.
 - D** Understanding the end user environment.
- 32** When developing a sales application, which of the following would be of critical importance?
- A** Exchange server.
 - B** Domain controller.
 - C** File server.
 - D** Database server.

- 33** What is **one** of the reasons why data storage could be important to an application?
- A** To enable customers to logon to a site.
 - B** To send emails to customers.
 - C** To retrieve and display information.
 - D** To store many important files.
- 34** Why is data modelling an important factor in software development?
- A** It determines the overall functional requirements for the software.
 - B** It ensures the scalability and architectural integrity of the overall system.
 - C** It indicates whether the software solution will be hosted on a local or cloud-based platform.
 - D** It provides an abstraction that can assist in understanding complex relationships.
- 35** Which of the following is a repository for open coding standards?
- A** Open University site.
 - B** C++ website.
 - C** GNU website.
 - D** Microsoft website.
- 36** Which of the following describes human computer interaction?
- A** The way in which people use computers and the communication between them.
 - B** The projects that people use to manage change and to develop computer systems.
 - C** The ways in which people's use of computers has developed through history.
 - D** The methods that people use to develop effective computer systems.
- 37** When developing interactive systems, which of the following **SHOULD** be of **PRIMARY** concern?
- A** Title.
 - B** Usability.
 - C** Aesthetics.
 - D** Features.

- 38** Organisations face cyber security threats from internal and external sources. Which of the following threats **NORMALLY** requires both internal and external parties to be involved?
- A** Distributed denial of service.
 - B** Social engineering.
 - C** Hacktivism.
 - D** Disgruntled employee attack.
- 39** Which of the following actions can help to build security into software during code development?
- a) Do not disclose sensitive information in error responses.
 - b) Do not pass user supplied data to any dynamic execution function.
 - c) Ensure that all test data is encrypted before undertaking unit tests.
- A** a and c only.
 - B** b and c only.
 - C** a and b only.
 - D** None of them.
- 40** A guest user has been making some amendments to some files which only administrators are authorised to change.
- Which of the following **CORRECTLY** describes this security breach?
- A** Cross-site scripting.
 - B** Privilege escalation.
 - C** Buffer overflows.
 - D** Denial of service.

-End of Paper-