



# BCS Level 4 Diploma in Software Languages

## QAN 603/0545/9

### Specimen Paper A

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

**Specimen paper only 20 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.

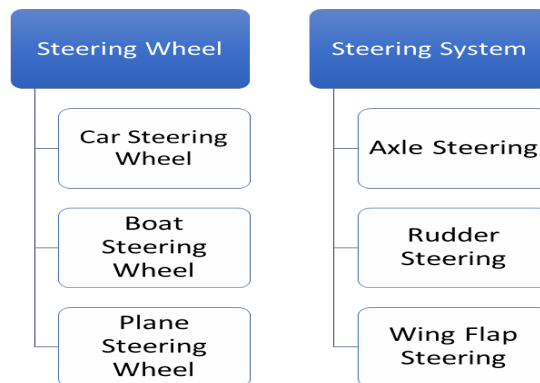
Pass mark is 13/20.

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**This qualification is regulated by Ofqual (in England).**

- 1** A sequential file has records sorted in date sequence. Which of the following is the CORRECT term that describes a simple algorithm to quickly access a required record in this sequential file?
- A** Split search.
  - B** Bubble search.
  - C** Bubble chop.
  - D** Binary search.
- 2** To identify that two or more processes are similar requires which form of computational thinking?
- A** Decomposition.
  - B** Abstraction.
  - C** Pattern recognition.
  - D** Algorithm.

- 3 Cars, planes and boats all use steering wheels, but they have different steering systems. Car steering wheels need an axle steering system. Boat steering wheels need a rudder steering system. Plane steering wheels need a wing flap steering system. Consider the following diagram that relates steering wheels to steering systems, using the vehicle steering wheel as a high-level abstraction:



What concept is illustrated by this example?

- A Polymorphism.
  - B Encapsulation.
  - C A bridge pattern.
  - D A concurrency pattern.
- 4 Which of the following are basic elements of a programming language?
- a) Assignment.
  - b) Library.
  - c) Loop.
  - d) Procedure call.
- A a and c only.
  - B a, c and d only.
  - C b, c and d only.
  - D b and c only.

- 5** Which of the following is a CORRECT term to specifically describe an item of data passed from a calling program / function to a called program / function?
- A** Parameter.
  - B** Variable.
  - C** Structure.
  - D** Constant.
- 6** Given a stack data structure, what will be the state of the stack after performing the following operations?
1. Push (Apple)
  2. Push (Banana)
  3. Pop ()
  4. Push (Orange)
  5. Pop ()
- A** Banana only.
  - B** Apple, Orange only.
  - C** Apple only.
  - D** Apple, Banana and Orange.
- 7** Which of the following describes an example of abstraction?
- A** Filtering out unneeded characteristics to concentrate on the needed characteristics.
  - B** Capturing only the most relevant details within the context of the problem.
  - C** Publishing a technical abstract of the requirements.
  - D** Extracting documentation from the code.

8 Select the answer that **CORRECTLY** describes the statement and the reason.

Statement: Maintenance requirements need to be considered at an early stage in the software development lifecycle (SDLC).

Reason: It is possible that the software will need to be corrected as a result of testing during the testing stage of the SDLC.

- A The statement and reason are both true, and the reason is an explanation for the statement.
- B The statement and reason are both true, but the reason is not an explanation for the statement.
- C The statement is true and the reason is false.
- D The statement is false and the reason is true.

9 Which of the following is **NOT** a Non-Functional Requirement (NFR)?

- A The order confirmation email must be delivered within 10 seconds of the email being sent.
- B A user must be able to remove an item from their basket.
- C The system needs to be used every weekday between the hours of 8 am and 8 pm.
- D All web user interactions with the system must use https secure protocol from login to logout.

10 Authentication performs what task?

- A Allows the user to enter their identity.
- B Checks to see what level of access a user is allowed.
- C Checks to see if the user is who they claim to be.
- D Checks that the password is strong enough.

**11** Select the answer that CORRECTLY describes the statement and the reason.

Statement: Re-using test patterns increases the chance of identifying common failures during testing.

Reason: Lack of variation in test data limits the effectiveness of discovering new bugs in code.

- A** The statement and the reason are both true and the reason is an explanation for the statement.
- B** The statement and the reason are both true, but the reason is not an explanation for the statement.
- C** The statement is true but the reason is false.
- D** The statement is false but the reason is true.

**12** Physical software design includes which of the following?

- a) Data design.
- b) Test design.
- c) Configuration design.
- d) Process design.

- A** a, c and d only.
- B** b and d only.
- C** a and d only.
- D** a, b and c only.

**13** A software designer has been given the following requirements for a hotel system.

Which of the requirements will be used in non-functional design?

- a) The software should enable guests to check into the hotel.
- b) The software needs to be online between the hours of 6 am and midnight.
- c) Response time for a hotel booking transaction should not exceed 1 second.
- d) The system must be able to process 5000 http requests per minute.
- e) The cost of the development project must not exceed \$500,000.

- A** a, c and e only.
- B** b, c and d only.
- C** c, d and e only.
- D** a and b only.

**14** What is the connection between software design and software testing?

- A** There is no connection between software design and testing.
- B** If software design is done properly then no bugs will continue to exist in a program after development and software testing is complete.
- C** Software testing is the process by which a software development company is able to identify issues that need to be addressed in their software design.
- D** The output of software design is a set of functional and non-functional requirements that software testing can check have been met.

**15** Which of the following are characteristics of an algorithm?

- a) Precision.
- b) Finiteness.
- c) Selection.
- d) Speed.

- A** a, b and c only.
- B** a, c and d only.
- C** b, c and d only.
- D** a, b and d only.

16 A hotel room has options of available, out of service and occupied.

Which pattern would be applicable?

- A Strategy.
- B State.
- C Singleton.
- D Architectural.

17 The following code has been developed by a code developer.

```
var tot2 = tot1 + tot3 + tot4;
```

```
if ( tot5 < tot2 ) {  
    print "the amount exceeds threshold";  
}
```

What would be the **MAIN** benefit for using more descriptive variable names?

- A The code would compile quicker.
- B The variables should be declared in ascending numeric sequence.
- C The code would be easier to maintain.
- D The code would be more efficient to run.

18 Which of the following describes a demilitarised zone?

- A It protects a contained sub-network from the threats of a larger, untrusted network, such as the Internet.
- B It protects a network and its devices by packet filtering.
- C A protects sub-networks that contain confidential data on storage devices from unauthorised access attempts.
- D It restricts access to a network by selectively allowing or blocking traffic according to a set of rules.



- 19** A software application used by the general public to purchase a variety of goods has a search function to help the buyer find the goods they want.
- A user has entered a search request, which has been submitted into the search field via a database query. The query has returned the required information but has also returned confidential information about the cost and pricing of the goods, which should not be available to the end-user.
- What nature of security incident has occurred?
- A** Distributed denial of service.
  - B** SQL injection vulnerability.
  - C** Firewall failure.
  - D** Cross-site scripting attack.
- 20** Which of the following describe **VALID** ways to represent an algorithm?
- a) Flow chart.
  - b) Pseudocode.
  - c) UML activity diagram.
  - d) Use case diagram.
- A** a, c and d only.
  - B** a and c only.
  - C** b and d only.
  - D** a, b and c only.

**-End of Paper-**