BCS Practitioner Certificate in Systems Modelling and Development

Specimen Paper

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

Sample paper only 20 questions, which are a mixture of multiple-choice and multiple-response questions – 1 mark awarded to each question. There are no trick questions.
Multiple choice questions allow only one correct answer to be selected for 1 mark.
Multiple response questions require the candidate to select a number of correct responses for 1 mark.

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

Pass mark is 13/20
Time allowed 30 minutes.

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1   Which roles is **most** important for systems development?

    A   Customer support representative.

    B   Accountant.

    C   Finance manager.

    D   Systems architect.

2   Which **two** example relate to elements listed in the BCS code of conduct?

    A   Promote equal access to the benefits of IT to promote inclusion.

    B   Accept professional responsibility for your work.

    C   Seek to implement IT systems to improve efficiency.

    D   Use your professional judgement over that of a relevant authority.

    E   Avoid giving and receiving honest criticism of work to reduce instances of conflict.

3   A project is divided to create smaller milestones and each milestone has a set deadline.

    Which type of development approach is described in the above sentence?

    A   Risk driven.

    B   Time driven.

    C   Milestone driven.

    D   Plan driven.

4   Which **one** of the following is a core value of the Agile Manifesto?

    A   Comprehensive documentation and audit trails.

    B   Customer collaboration over contract negotiation.

    C   Following and adhering to a set plan.

    D   Ensuring value for money for customers.

5 Which **one** of the following is a basic characteristic of rapid application development (RAD)?

A Joint requirements planning.

B Avoid non-functional requirements.

C Establish baseline.

D Use off the shelf solutions.

6 Your development team need to create an application for a customer who is selling to an existing client in a market they are familiar with.

Which solutions development lifecycle methodology is the **most** appropriate?

A Agile.

B Waterfall.

C Iterative.

D Spiral.

7 You work as part a development team in a small organisation. The current development team is made up of two people. They have been instructed by senior stakeholders to suggest approaches to develop large-scale update to the customer relationship management (CRM) system. The current bespoke CRM system has been in operation for nine years with minimal updates during this period.

What is the **most** appropriate approach?

A Develop a new bespoke CRM system to replace the current software.

B Search of off-the-shelf options to integrate into the current architecture.

C Make updates to the current CRM system.

D Hire temporary resource to help integrate an off-the-shelf option.

8 An organisation working on an update to safety-critical system in the medical industry. As part of the development plan, the team have decided to adopt a hybrid approach.

Which **one** of the following are aspects of a waterfall approach?

A Iterative testing and deployment.
B The ability to incorporate changes throughout development.
C Comprehensive documentation for each phase.
D Using cross-functional teams throughout development.

9 You are documenting the processes for your organisation's new application. You have identified that a group of major participants all work in the same department.

Based on the Business Process Model and Notation 2.0 (BPMN 2.0), what is the **most** appropriate method of represent them?

A Pool.
B Lanes.
C Flow objects.
D Activity.

10 Your company has provided you with a use case diagram template to document the new system. The template has an ellipse or horizontal oval symbol.

Which **two** of the following would be valid values to use in this symbol?

A System information.
B Hardware requirements.
C Customer.
D Add to cart.
E Payment confirmation.

11 Which **one** of the following is a component of a use case diagram?

    A State.
    B System.
    C Class.
    D Process.

12 Which of the following is **true** about use case diagrams?

    A They consider the specific workings of the system.
    B They do not indicate the sequence of events.
    C Actors are considered external to the processes / use cases.
    D An actor has to be a human.

13 Which **one** of the following is true of a class attribute, in relation to class or structure diagrams?

    A They are about performing actions.
    B They must be included.
    C They are shared across all instances of a class.
    D They define behaviours or the class.

14 A text editor and spell checker is an example of which type of association?

    A Inheritance.
    B Hierarchical.
    C Realisation.
    D Dependency.

15 Which of the following is **true** in regard to mapping object-oriented models to relational data?

    A Objects can contain information that does not directly map to relational tables.

    B There is no way to map the two different paradigms.

    C Object-oriented models and relational models are directly compatible.

    D Schema changes do not need to be considered.

16 Which **one** of the following describes a compound state?

    A A complex state that forms a hierarchical structure.

    B An individual instance of a class or entity.

    C A method of documenting event modelling.

    D A way of detailing the sequence of actions.

17 A developer wants to accurately model the sequence of events and interactions in an embedded system to improve synchronisation with other systems.

What is the **most** appropriate method to achieve this?

    A State diagram.

    B Timing diagram.

    C State transition model.

    D Class diagram.

18 Which of the following would **most** appropriately be identified in a state transition model?

    A The current state of a system and its intended state.

    B The transition of information, e.g. from actor to use cases.

    C The location of where the data is from.

    D The states of an account, e.g. inactive, active, closed.

19 What aspects do logical modules **not** consider?

    A Interactions between actors and use cases.
    B Resource constraints of the organisation.
    C The types of data being used.
    D Classes, attributes, and behaviours.

20 Which of the following is **not** considered when creating a logical data model?

    A Entities.
    B Relationships.
    C Attributes.
    D Optimisation.

End of Paper

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Answer Key and Rationale

Question	Answer	Rationale	Syllabus Section
1	D	All other options might be included if the project is related to aspects of their roles. However, they are not a requirement to developing systems.	1.1
2	A and B	These statements relate to the public interest and professional competence and integrity standards of the BCS Code of Conduct.	1.4
3	B	Setting deadlines for each milestone is an example of a time driven approach.	2.2
4	B	This is one of the four values of the Agile Manifesto. The other three are: • Individuals and interactions over processes and tools. • Working software over comprehensive documentation. • Responding to change over following a plan.	2.3
5	A	Joint requirements planning is and element of RAD that uses collaborative approach to obtain requirements.	2.4
6	D	The Spiral methodology, whilst flexible, is better suited to large projects with known risks that can be evaluated.	2.5

7	B	Due to the limited resources available, an off-the-shelf option is the most feasible approach to this scenario.	3.1
8	C	This is a specifically Waterfall practice, which could be adopted as part of a hybrid approach.	3.2
9	A	A group of major participants can be presented as a pool.	4.1
10	D and E	The other 3 options are actors, not use cases which the ellipse symbol represents.	4.1
11	B	Systems are a component of use case diagrams; the other options are not.	4.2
12	C	Actors are external entities that interact with the system or process.	4.3
13	C	In object-oriented programming, class attributes are shared across all instances of a class.	5.1
14	D	The text editor can be considered a class that depends on a spell checker class to perform spell-checks.	5.2
15	A	Objects can contain complex data types and nested structures.	5.3
16	A	This is an example of a compound state, which is defined as a state which contains other states.	6.1
17	B	Timing diagrams represent the temporal aspects of system behaviour.	6.2
18	D	State transition models are used to design systems where behaviour is affected by state changes and events.	6.1

19	B	Logical modules at an abstract level do not inherently consider the resource constraints and/or limitations of an organisation.	7.1
20	D	Logical models are not designed to consider performance optimisation or hardware restraints.	7.2