Entrance Exam for the Study Programmes Information Systems and Technologies, ISIT Management and Information Engineering 2026

Task code:	1	2	4	5	6	7

1. The SQL function COUNT (*):
   a. Returns the sum of the values of the first attribute
   b. Returns a NULL value
   c. Calculates the average value
   d. Finds the number of rows in a group
   e. Finds the maximum value
   n. I don't know

2. A table is created in SQL with the statement:
   a. SELECT TABLE
   b. CREATE TABLE
   c. MODIFY TABLE
   d. ALTER TABLE
   e. DROP TABLE
   n. I don't know

3. A use case diagram contains the following node types:
   a. Actor and direct association
   b. Use case and dependency relationship
   c. Generalization and dependency relationship
   d. Actor and use case
   e. Use case and generalization
   n. I don't know

4. The basic characteristics of an Abstract Data Type (ADT) are:
   a. Parameterization and information hiding
   b. Polymorphism and encapsulation
   c. Abstraction and parameterization
   d. Encapsulation and information hiding
   e. Object orientation and polymorphism
   n. I don't know

5. The basic characteristic of Cloud architecture is:
   a. Processing of complex events in a continuous flow (stream processing)
   b. Communication between components based on the publish/subscribe principle.
   c. Use of virtual computing resources
   d. Ability to reuse business logic
   e. Independence of databases from applications
   n. I don't know

6. Initially loading the program counter (*Program Counter*) with the address of the program's first instruction is performed by a system program called:
   a. Assembler
   b. Loader
   c. Interpreter
   d. Compiler
   e. Shell
   n. I don't know

7. A decision problem that is clear, has precisely defined input data, and whose method of solution is known is:
   a. Structured
   b. Strategic
   c. Traditional
   d. Tactical
   e. Conservative
   n. I don't know

8. Which of the following is not an element of the 7S model of organization:
   a. Skills
   b. Systems
   c. Processes
   d. Staff
   e. Shared values
   n. I don't know

9. A table definition is modified in SQL with the statement:
   a. CREATE TABLE
   b. ALTER TABLE
   c. MODIFY TABLE
   d. SELECT TABLE
   e. DROP TABLE
   n. I don't know

10. Which of the following data models does not underlie any known commercial DBMS:
    a. Object model
    b. Relational model
    c. Hierarchical model
    d. Entity-relationship model
    e. Network model
    n. I don't know

11. In the Extended Entity-Relationship model, a weak entity is identified by:

a. The parent's identifier and its own identifier
b. Its own identifier only
c. It inherits the parent's identifier
d. The identifiers of all parents
e. It has no identifier
n. I don't know

12. In a data model, generalization represents a mapping from:

a. Subtype → Subtype
b. Supertype → Supertype
c. Supertype → Subtype
d. Strong entity → Weak entity
e. Subtype → Supertype
n. I dont't know

13. The definition "If every constraint on the values of a relation's attributes is a consequence of keys and domains" describes the following normal form:

a. BCNF (Boyce-Codd)
b. DKNF (Domain-Key)
c. 4NF
d. 3NF
e. 2NF
n. I dont't know

14. XPath is a language that enables:

a. Transformation of one XML document into another
b. Procedural manipulation of an XML document
c. Display of simple, unmodified content from a collect of XML documents
d. Validation of an XML document
e. Addressing parts of an XML document
n. I don't know

15. In UML diagrams, a synchronous message is used for:

a. Calling an object's operation and waiting for its response
b. Calling an object's operation without waiting for its response
c. Creating an object
d. Marking objects for deletion
e. Returning a response to the caller of a synchronous message
n. I don't know

16. The main scenario is always executed:

a. When the <<extend>> stereotype is used, but not when the <<include>> stereotype is used
b. When the <<include>> stereotype is used, but not when the <<extend>> stereotype is used
c. Both when the <<extend>> stereotype is used and when the <<include>> stereotype is used
d. The main scenario is executed neither when the <<extend>> stereotype is used nor when the <<include>> stereotype is used
e. The main scenario is executed, but it must itself have the <<execute>> stereotype
n. I don't know

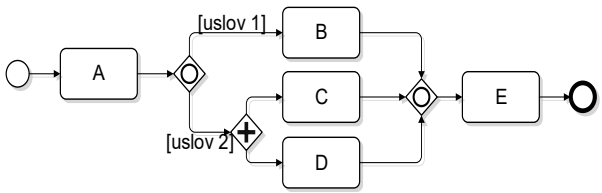
17. The basic types of models in Model-Driven Architecture (MDA) are:

a. Computation-independent, computation-specific, platform-specific
b. Computation-independent, platform-independent, platform-specific
c. Platform-independent, platform-specific, computation-dependent
d. Platform-independent, computation-independent, computation-dependent
e. Technology-neutral, platform-neutral, computation-neutral
n. I don't know

18. A BPMN diagram describing the execution of a process is given.

The symbol  represents an inclusive gateway. The symbol  represents a parallel gateway.
For a single execution of the process, which of the given answers represents an impossible order of task execution?

a. ADCE
b. ABCE
c. ACDE
d. ABE
e. None of the above
n. I don't know



19. The original *von-Neumann* machine has:
a. 3 components
b. 9 components
c. 4 components
d. 7 components
e. 5 components
n. I don't know

20. Content-based image retrieval is most often performed on the basis of some image property (feature). How can a feature (image property) be defined:
a. It denotes the basic storage characteristics of an image, such as format and size
b. An attribute derived by transforming the original visual object using an image analysis algorithm
c. It denotes the metadata that determine whether an image is raster or vector
d. Algorithmic conversion of an image from raster vector format
e. A textual description of an image produced through human analysis
n. I don't know

21. A Decision Support System (DSS) consists of at least the following subsystems:
a. Database, model base and user interface
b. Model base, inference engine and knowledge base
c. Data warehouse, data centers and OLAP cube
d. Database, data warehouse and data centers
e. OLAP, ROLAP and MOLAP
n. I don't know

22. If **a** denotes true positive objects, **b** false negatives, **c** false positives, and **d** true negatives, then the **beta error** is calculated as:
a. (a+d)/(a+b+c+d)
b. c/(c+d)
c. b/(c+d)
d. (b+c)/(a+b+c+d)
e. b/(a+b)
n. I don't know

23. Which of the following is not an advantage of buying off-the-shelf software solutions?
a. Ownership of the software
b. Compliance with standards
c. Built-in expert experience
d. No programming errors
e. Maintenance is provided
n. I don't know

24. Aggregation is an abstraction:
a. In which details are included in the system description in a controlled and gradual manner
b. In which a set of similar object types is represented by a general, generic type
c. In which a set of objects and their mutual relationships is treated as a new single type
d. In which objects that have the same set of properties and the same dynamic behavior can be represented by a type
e. A general methodological approach for managing complexity in system description
n. I don't know

25. The SQL query that returns the Cartesian product of relations Ra and Rb is:
a. SELECT * FROM Ra INNER JOIN Rb
b. SELECT Ra.* FROM Ra CROSS JOIN Rb
c. SELECT * FROM Ra FULL OUTER JOIN Rb
d. SELECT * FROM Ra,Rb
e. None of the above answers
n. I don't know

26. Which of the following is NOT a valid interval type:
a. INTERVAL YEAR TO MONTH
b. INTERVAL YEAR TO DAY
c. INTERVAL DAY TO HOUR
d. INTERVAL YEAR (p)
e. INTERVAL DAY(5) TO SECOND(10)
n. I don't know

27. Which of the following is a key characteristic of a framework:
a. A framework is a complete application
b. The application plays an active role in controlling the order in which framework methods are called
c. A framework enables code reuse only
d. The framework plays an active role in controlling the application's flow of execution (inversion of control)
e. A framework is not extensible
n. I don't know

28. The ISA architecture models are:

a. Stack, program counter, register-memory, memory-memory and register-register
b. Stack, instruction register, register-memory, memory-memory and register-register
c. Stack, buffer register, register-memory, memory-memory and register-register
d. Stack, memory address register, register-memory, memory-memory and register-register
e. Stack, accumulator, register-memory, memory-memory and register-register
n. I don't know

29. Where are data and aggregations stored in a ROLAP system:

a. Data are stored in the data warehouse and aggregatio in the OLAP cube
b. Aggregations are stored in the data warehouse and data in the OLAP cube
c. Both data and aggregations are stored in the data warehouse
d. Data are stored in the database and aggregations in the data warehouse
e. Both data and aggregations are stored in the OLAP cube
n. I don’t know

30. What are the IT service delivery processes?

a. Service desk, capacity management, change management, IT service continuity management, configuration management
b. Service desk, incident management, problem management, change management, release management and configuration management
c. Service level management, availability management, IT service continuity management, capacity management and financial management for IT services
d. Availability management, incident management, problem management, release management, financial management for IT services
e. Configuration management, service level management, capacity management, IT service continuity management, service desk
n. I don't know