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| 1. The entity supertype contains common characteristics, and the entity subtypes each contain their own unique characteristics.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1a Entity Supertypes and Subtypes | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 2. Entity supertypes and subtypes are organized in a specialization hierarchy.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 3. The relationships depicted within the specialization hierarchy are sometimes described in terms of “is-a” relationships.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 4. Within a specialization hierarchy, a supertype can exist only within the context of a subtype.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 5. One important inheritance characteristic is that all entity subtypes inherit their primary key attribute from their supertype.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 6. A subtype contains attributes that are common to all of its supertypes.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 7. At the implementation level, the supertype and its subtype(s) depicted in the specialization hierarchy maintain a 1:1 relationship.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 8. Entity subtypes do not inherit the relationships in which the supertype entity participates.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 9. In specialization hierarchies with multiple levels of supertype and subtypes, a lower-level subtype can inherit only a few of the attributes and relationships from its upper-level supertypes.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 10. The property of a subtype discriminator enables an entity supertype to inherit the attributes and relationships of the subtype.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1d Subtype Discriminator | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 11. An entity supertype can have disjoint or overlapping entity subtypes.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 12. Disjoint subtypes are subtypes that contain nonunique subsets of the supertype entity set.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 13. Overlapping subtypes are subtypes that contain a unique subset of the supertype entity set.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 14. Implementing overlapping subtypes requires the use of one discriminator attribute for each subtype.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 15. The completeness constraint can be partial or total.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 16. Specialization is the top-down process of identifying lower-level, more specific entity subtypes from a higher-level entity supertype.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1g Specialization and Generalization | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 17. An entity cluster is a "virtual" entity type used to represent multiple entities and relationships in the ERD.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-2 Entity Clustering | | *LEARNING OBJECTIVES:* | 05.02 - Use entity clusters to represent multiple entities and relationships in an entity relationship | |

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| 18. The function of the primary key is to describe an entity.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 19. To model time-variant data, one must create a new entity in an M:N relationship with the original entity.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-4b Design Case 2: Maintaining History of Time-Variant Data | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 20. A design trap occurs when a relationship is improperly or incompletely identified and is therefore represented in a way that is not consistent with the real world.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-4c Design Case 3: Fan Traps | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| Multiple Choice |

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| 21. The extended entity relationship model (EERM) is sometimes referred to as the \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | enclosed entity relationship model | b. | enhanced entity relationship model | |  | c. | entity clustering relationship model | d. | extended entity relationship diagram |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1 The Extended Entity Relationship Model | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 22. A(n)\_\_\_\_\_ is a generic entity type that is related to one or more entity subtypes.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | subtype discriminator | b. | inheritance | |  | c. | specialization hierarchy | d. | entity supertype |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1a Entity Supertypes and Subtypes | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 23. The \_\_\_\_\_ depicts the arrangement of higher-level entity supertypes (parent entities) and lower-level entity subtypes (child entities).   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | subtype discriminator | b. | inheritance | |  | c. | specialization hierarchy | d. | entity supertype |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 24. Within a specialization hierarchy, every subtype can have \_\_\_\_\_ supertype(s) to which it is directly related.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | zero | b. | only one | |  | c. | one or many | d. | many |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 25. A specialization hierarchy can have \_\_\_\_\_ level(s) of supertype/subtype relationships.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | zero | b. | only one | |  | c. | one or many | d. | many |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 26. The property of \_\_\_\_\_ enables an entity subtype to inherit the attributes and relationships of the supertype.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | subtype discriminator | b. | inheritance | |  | c. | specialization hierarchy | d. | entity supertype |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 27. One important inheritance characteristic is that all entity subtypes inherit their \_\_\_\_\_ key attribute from their supertype.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | primary | b. | natural | |  | c. | foreign | d. | surrogate |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 28. At the implementation level, the supertype and its subtype(s) depicted in a specialization hierarchy maintain a(n) \_\_\_\_\_ relationship.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | self-referencing | b. | 1:1 | |  | c. | 1:M | d. | M:N |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1c Inheritance | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 29. A(n) \_\_\_\_\_ is the attribute in the supertype entity that determines to which entity subtype each supertype occurrence is related.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | subtype discriminator | b. | inheritance discriminator | |  | c. | specialization hierarchy | d. | entity supertype |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1d Subtype Discriminator | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 30. The default comparison condition for the subtype discriminator attribute is the \_\_\_\_\_ comparison.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | nonequality | b. | less than | |  | c. | greater than | d. | equality |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty:Easy | | *REFERENCES:* | 5-1d Subtype Discriminator | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 31. Which of the following is a specialization hierarchy disjoint constraint scenario in case of partial completeness?   |  |  |  | | --- | --- | --- | |  | a. | Subtype discriminator can be null. | |  | b. | Subtype discriminator cannot be null. | |  | c. | Each supertype occurrence is a member of only one subtype. | |  | d. | Each supertype occurrence is a member of at least one subtype. |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 32. Which of the following is a specialization hierarchy overlapping constraint scenario in case of partial completeness?   |  |  |  | | --- | --- | --- | |  | a. | Subtype sets are unique. | |  | b. | Supertype has optional subtypes. | |  | c. | Subtype discriminators cannot be null. | |  | d. | Subtype does not have a supertype. |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 33. Nonoverlapping subtypes are subtypes that contain a(n) \_\_\_\_\_ subset of the supertype entity set.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | entity | b. | subtypes | |  | c. | unique | d. | nonunique |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 34. Overlapping subtypes are subtypes that contain \_\_\_\_\_ subsets of the supertype entity set.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | null | b. | exclusive | |  | c. | solitary | d. | nonunique |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 35. A total completeness constraint is represented by a \_\_\_\_\_.   |  |  |  | | --- | --- | --- | |  | a. | smaller circle inside a bigger circle | |  | b. | rhombus inside a circle | |  | c. | double horizontal line under a circle | |  | d. | single horizontal line above a circle |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 36. A partial completeness constraint is represented by \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | a dotted line | b. | two dashed lines | |  | c. | a single horizontal line under a circle | d. | a double horizontal line over a circle |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty:Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 37. In the context of total completeness, in a(n) \_\_\_\_\_, every supertype occurrence is a member of only one subtype.   |  |  |  | | --- | --- | --- | |  | a. | foreign key constraint | |  | b. | nonunique constraint | |  | c. | overlapping constraint | |  | d. | disjoint constraint |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 38. In the context of total completeness, in a(n) \_\_\_\_\_, every supertype occurrence is a member of at least one subtype.   |  |  |  | | --- | --- | --- | |  | a. | unique constraint | |  | b. | disjoint constraint | |  | c. | overlapping constraint | |  | d. | foreign key constraint |  |  |  | | --- | --- | | *ANSWER:* | c | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 39. \_\_\_\_\_ is the bottom-up process of identifying a higher-level, more generic entity supertype from lower-level entity subtypes.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | Specialization | b. | Generalization | |  | c. | Normalization | d. | Total completeness |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1g Specialization and Generalization | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 40. The purpose of an entity \_\_\_\_\_ is to simplify an entity-relationship diagram (ERD) and thus enhance its readability.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | constraint | b. | cluster | |  | c. | interface | d. | discriminator |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-2 Entity Clustering | | *LEARNING OBJECTIVES:* | 05.02 - Use entity clusters to represent multiple entities and relationships in an entity relationship | |

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| 41. An entity cluster is formed by combining multiple interrelated entities into \_\_\_\_\_.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | a single abstract entity object | b. | multiple abstract entity objects | |  | c. | a single entity object | d. | multiple entity objects |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-2 Entity Clustering | | *LEARNING OBJECTIVES:* | 05.02 - Use entity clusters to represent multiple entities and relationships in an entity relationship | |

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| 42. The most important characteristic of an entity is its \_\_\_\_\_ key, used to uniquely identify each entity instance.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | primary | b. | natural | |  | c. | foreign | d. | surrogate |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3 Entity Integrity: Selecting Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 43. A \_\_\_\_\_ key is a real-world, generally accepted identifier used to uniquely identify real-world objects.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | primary | b. | natural | |  | c. | foreign | d. | surrogate |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3a Natural Keys and Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 44. If one exists, a data modeler uses a \_\_\_\_\_ as the primary key of the entity being modeled.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | foreign key | b. | combination key | |  | c. | surrogate key | d. | natural identifier |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3a Natural Keys and Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 45. A \_\_\_\_\_ is a primary key created by a database designer to simplify the identification of entity instances.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | composite key | b. | compound key | |  | c. | natural key | d. | surrogate key |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3d When to Use Surrogate Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 46. Composite primary keys are particularly useful as identifiers of composite entities, where each primary key combination is allowed only once in the \_\_\_\_\_ relationship.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | 0:1 | b. | 1:1 | |  | c. | 1:M | d. | M:N |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3c When to Use Composite Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 47. The “\_\_\_\_\_” characteristic of a primary key states that the selected primary key must not be composed of any attribute(s) that might be considered a violation.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | unique values | b. | nonintelligent | |  | c. | preferably single-attribute | d. | security-compliant |  |  |  | | --- | --- | | *ANSWER:* | d | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 48. The “\_\_\_\_\_” characteristic of a primary key states that the primary key must uniquely identify each entity instance, must be able to guarantee unique values, and must not contain nulls.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | unique values | b. | nonintelligent | |  | c. | preferably single-attribute | d. | security-complaint |  |  |  | | --- | --- | | *ANSWER:* | a | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 49. According to the “preferably single-attribute” characteristic of a primary key, the primary key:   |  |  |  | | --- | --- | --- | |  | a. | must be able to guarantee unique attribute values. | |  | b. | should have the minimum number of attributes possible. | |  | c. | should have embedded semantic meaning associated with each attribute. | |  | d. | must be composed of attributes that are free from security risks or violations. |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 50. The “\_\_\_\_\_” characteristic of a primary key states that the primary key should not have embedded semantic meaning.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | unique values | b. | nonintelligent | |  | c. | preferably single-attribute | d. | security-compliant |  |  |  | | --- | --- | | *ANSWER:* | b | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 51. The \_\_\_\_\_ is the result of adding more semantic constructs to the original entity relationship (ER) model.   |  |  | | --- | --- | | *ANSWER:* | extended entity relationship model (EERM)  EERM (extended entity relationship model)  extended entity relationship model  EERM | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1 The Extended Entity Relationship Model | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 52. Disjoint subtypes are also known as \_\_\_\_\_ subtypes.   |  |  | | --- | --- | | *ANSWER:* | non-overlapping  nonoverlapping | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 53. Subtypes that contain nonunique subsets of the supertype entity set are known as \_\_\_\_\_ subtypes.   |  |  | | --- | --- | | *ANSWER:* | overlapping | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1e Disjoint and Overlapping Constraints | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 54. The \_\_\_\_\_ specifies whether each entity supertype occurrence must also be a member of at least one subtype.   |  |  | | --- | --- | | *ANSWER:* | completeness constraint | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 55. \_\_\_\_\_ completeness means that not every supertype occurrence is a member of a subtype.   |  |  | | --- | --- | | *ANSWER:* | Partial | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 56. \_\_\_\_\_ completeness means that every supertype occurrence must be a member of at least one subtype.   |  |  | | --- | --- | | *ANSWER:* | Total | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1f Completeness Constraint | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 57. Specialization is based on grouping \_\_\_\_\_ characteristics and relationships of the subtypes.   |  |  | | --- | --- | | *ANSWER:* | unique | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-1g Specialization and Generalization | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 58. An entity cluster is considered “virtual” or “\_\_\_\_\_” in the sense that it is not actually an entity in the final ERD.   |  |  | | --- | --- | | *ANSWER:* | abstract | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-2 Entity Clustering | | *LEARNING OBJECTIVES:* | 05.02 - Use entity clusters to represent multiple entities and relationships in an entity relationship | |

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| 59. Usually, a data modeler uses a natural identifier as the \_\_\_\_\_ of the entity being modeled, assuming that the entity has a natural identifier.   |  |  | | --- | --- | | *ANSWER:* | primary key | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3a Natural Keys and Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 60. Unique values can be better managed when they are \_\_\_\_\_, because the database can use internal routines to implement a counter-style attribute that automatically increments values with the addition of each new row.   |  |  | | --- | --- | | *ANSWER:* | numeric | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 61. Composite primary keys are particularly useful as identifiers of composite entities, where each primary key combination is allowed \_\_\_\_\_ in the M:N relationship.   |  |  | | --- | --- | | *ANSWER:* | only once  once | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3c When to Use Composite Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 62. Composite keys are useful as identifiers of weak entities, where the weak entity has a strong \_\_\_\_\_ relationship with the parent entity.   |  |  | | --- | --- | | *ANSWER:* | identifying | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3c When to Use Composite Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 63. A weak entity in a strong identifying relationship with a parent entity is normally used to represent a(n) \_\_\_\_\_ that is represented in the data model as two separate entities.   |  |  | | --- | --- | | *ANSWER:* | real-world object | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3c When to Use Composite Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 64. One practical advantage of a(n) \_\_\_\_\_ key is that because it has no intrinsic meaning, values for it can be generated by the DBMS to ensure that unique values are always provided.   |  |  | | --- | --- | | *ANSWER:* | surrogate | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-3d When to Use Surrogate Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 65. While using a surrogate key, one must ensure that the candidate key of the entity in question performs properly through the use of the “\_\_\_\_\_” and “not null” constraints.   |  |  | | --- | --- | | *ANSWER:* | unique index | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3d When to Use Surrogate Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 66. From a data modeling point of view, \_\_\_\_\_ data refer to data whose values change over time and for which one must keep a history of the data changes.   |  |  | | --- | --- | | *ANSWER:* | time-variant | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-4b Design Case 2: Maintaining History of Time-Variant Data | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 67. A(n) \_\_\_\_\_ occurs when a relationship is improperly or incompletely identified and is therefore represented in a way that is not consistent with the real world.   |  |  | | --- | --- | | *ANSWER:* | design trap | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-4c Design Case 3: Fan Traps | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 68. The main concern with redundant relationships is that they remain \_\_\_\_\_ across the model.   |  |  | | --- | --- | | *ANSWER:* | consistent | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-4d Design Case 4: Redundant Relationships | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 69. \_\_\_\_\_ keys work with primary keys to properly implement relationships in the relational model.   |  |  | | --- | --- | | *ANSWER:* | Foreign | | *DIFFICULTY:* | Difficulty: Easy | | *REFERENCES:* | 5-4a Design Case 1: Implementing 1:1 Relationships | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 70. A(n) \_\_\_\_\_ occurs when you have one entity in two 1:M relationships to other entities, thus producing an association among the other entities that is not expressed in the model.   |  |  | | --- | --- | | *ANSWER:* | fan trap | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-4c Design Case 3: Fan Traps | | *LEARNING OBJECTIVES:* | 05.04 - Apply flexible solutions for special data-modeling cases | |

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| 71. What do specialization hierarchies do?   |  |  | | --- | --- | | *ANSWER:* | Entity supertypes and subtypes are organized in a specialization hierarchy, which depicts the arrangement of higher-level entity supertypes (parent entities) and lower-level entity subtypes (child entities). Specialization hierarchies enable the data model to capture additional semantic content (meaning) into the ERD. A specialization hierarchy provides the means to:  • Support attribute inheritance.  • Define a special supertype attribute known as the subtype discriminator.  • Define disjoint/overlapping constraints and complete/partial constraints. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1b Specialization Hierarchy | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 72. Differentiate between specialization and generalization.   |  |  | | --- | --- | | *ANSWER:* | Specialization is the top-down process of identifying lower-level, more specific entity subtypes from a higher-level entity supertype. Specialization is based on grouping the unique characteristics and relationships of the subtypes. On the other hand, generalization is the bottom-up process of identifying a higher-level, more generic entity supertype from lower-level entity subtypes. Generalization is based on grouping the common characteristics and relationships of the subtypes. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1g Specialization and Generalization | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 73. Explain the two criteria that help a designer in determining when to use subtypes and supertypes.   |  |  | | --- | --- | | *ANSWER:* | Two criteria help a designer determine when to use subtypes and supertypes:  1. There must be different, identifiable kinds or types of an entity in the user’s environment.  2. The different kinds or types of instances should each have one or more attributes that are unique to that kind or type of instance. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-1a Entity Supertypes and Subtypes | | *LEARNING OBJECTIVES:* | 05.01 -  Describe the main extended entity relationship (EER) model constructs and how they are represented in ERDs and EERDs | |

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| 74. Explain the “no change over time” characteristic of a primary key.   |  |  | | --- | --- | | *ANSWER:* | If an attribute has semantic meaning, it might be subject to updates, which is why names do not make good primary keys. If a primary key is subject to change, the foreign key values must be updated, thus adding to the database work load. Furthermore, changing a primary key value means that one is basically changing the identity of an entity. In short, the PK should be permanent and unchangeable. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3b Primary Key Guidelines | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |

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| 75. In which two cases are composite primary keys particularly useful?   |  |  | | --- | --- | | *ANSWER:* | Composite primary keys are particularly useful in two cases:   1. As identifiers of composite entities, in which each primary key combination is allowed only once in the M:N relationship. 2. As identifiers of weak entities, in which the weak entity has a strong identifying relationship with the parent entity. | | *DIFFICULTY:* | Difficulty: Moderate | | *REFERENCES:* | 5-3c When to Use Composite Primary Keys | | *LEARNING OBJECTIVES:* | 05.03 - Describe the characteristics of good primary keys and how to select them | |