1. **(T or F) 1) A data model is a plan for a database design.** TRUE Diff: 1 Page Ref: 145
2. **(T or F) 2) An entity is something that users want to track.** TRUE Diff: 1 Page Ref: 145
3. **(T or F) 3) Entities of a given type are grouped into entity classes.** TRUE Diff: 1 Page Ref: 145
4. **(T or F) 4) An entity class is described by the structure of the entities in that class.** TRUE Diff: 2 Page Ref: 145
5. **(T or F) 5) An entity instance of an entity class is the representation of a particular entity and is described by the values of the attributes of the entity.** TRUE Diff: 3 Page Ref: 145-146
6. **(T or F) 6) In E-R modeling, an attribute describes the characteristics of an entity.** TRUE Diff: 1 Page Ref: 146
7. **(T or F) 7) In E-R modeling, entities within an entity class may have different attributes.** FALSE Diff: 1 Page Ref: 146
8. **(T or F) 8) An identifier of an entity instance must consist of one and only one attribute.** FALSE Diff: 1 Page Ref: 146-147
9. **(T or F) 9) A "composite identifier" is defined as a composite attribute that is an identifier.** FALSE Diff: 3 Page Ref: 146-147
10. **(T or F) 10) An identifier serves the same role for a table that a key does for an entity.** FALSE Diff: 2 Page Ref: 147
11. **(T or F) 11) E-R modeling recognizes both relationship classes and relationship instances.** TRUE Diff: 1 Page Ref: 147
12. **(T or F) 12) In today's E-R models, attributes of relationships are still used.** FALSE Diff: 2 Page Ref: 147
13. **(T or F) 13) A single relationship class involves only one entity class.** FALSE Diff: 3 Page Ref: 147
14. **(T or F) 14) A binary relationship is a relationship based on numerical entity instance identifiers.** FALSE Diff: 2 Page Ref: 148
16. **(T or F) 16) When transforming a data model into a relational design, relationships of all degrees are treated as combinations of binary relationships.** TRUE Diff: 2 Page Ref: 148
17. **(T or F) 17) The principle difference between an entity and a table is that you can express a relationship between entities without using foreign keys.** TRUE Diff: 2 Page Ref: 148
18. **(T or F) 18) When designing a database, first identify the entities, then determine the attributes, and finally create the relationships.** FALSE Diff: 3 Page Ref: 148
19. **(T or F) 19) Relationships are classified by their cardinality.** TRUE Diff: 1 Page Ref: 149
20. **(T or F) 20) A relationship's maximum cardinality indicates the maximum number of entities that can participate in the relationship.** FALSE Diff: 3 Page Ref: 149
21. **(T or F) 21) In an E-R model, the three types of maximum cardinality are 1:1, 1:N and N:M.** TRUE Diff: 1 Page Ref: 149-150 Fig 5-5
22. **(T or F) 22) In a 1:N relationship, the term parent refers to the N side of the relationship.** FALSE Diff: 2 Page Ref: 149
23. **(T or F) 23) A relationship's minimum cardinality indicates whether or not an entity must participate in the relationship.** TRUE Diff: 1 Page Ref: 149, 150

24.	**(T or F) 24) In an E-R model, the three types of minimum cardinality are mandatory, optional and indeterminate.**	FALSE Diff: 1 Page Ref: 150-15 Fig 5-6
25.	**(T or F) 25) An ID-dependent entity is an entity whose identifier includes the identifier of another entity.**	TRUE Diff: 2 Page Ref: 153 Fig 5-12
26.	**(T or F) 26) ID-dependent entities are associated by a nonidentifying relationship.**	FALSE Diff: 2 Page Ref: 154
27.	**(T or F) 27) A weak entity is an entity that cannot exist in the database without (and is logically dependent upon) another type of entity also existing in the database.**	TRUE Diff: 3 Page Ref: 155-156 Fig 5-12
28.	**(T or F) 28) ID-dependent entities are a common type of weak entity.**	TRUE Diff: 2 Page Ref: 154 Fig 5-12
29.	**(T or F) 29) All weak entities must have a minimum cardinality of 1 on the entity on which it depends.**	TRUE Diff: 3 Page Ref: 155-156 Fig 5-12
30.	**(T or F) 30) Subtype entities contain only attributes unique to the subtypes.**	TRUE Diff: 3 Page Ref: 156-157
31.	**(T or F) 31) An attribute that determines which subtype is appropriate is called a discriminator.**	TRUE Diff: 1 Page Ref: 157
32.	**(T or F) 32) An exclusive subtype pattern has one supertype entity that relates to one or more subtype entities.**	FALSE Diff: 2 Page Ref: 157
33.	**(T or F) 33) Entities with an IS-A relationship should have the same identifier.**	TRUE Diff: 2 Page Ref: 157
34.	**(T or F) 34) One example of a database design using an ID-dependent relationship is the association pattern.**	TRUE Diff: 2 Page Ref: 162
35.	**(T or F) 35) One example of a database design using a strong relationship is the multivalued attribute pattern.**	FALSE Diff: 2 Page Ref: 164
36.	**(T or F) 36) One example of a database design using an ID-dependent relationship is the archetype/instance pattern.**	TRUE Diff: 2 Page Ref: 166
37.	**(T or F) 37) Data modelers agree that weak, non-ID-dependent entities exist and are important.**	FALSE Diff: 2 Page Ref: 154-156
38.	**(T or F) 38) Relationships among instances of a single entity class are called redundant relationships.**	FALSE Diff: 2 Page Ref: 172
39.	**(T or F) 39) There are three types of recursive relationships: 1:1, 1:N and N:M.**	TRUE Diff: 2 Page Ref: 172-174
40.	**(T or F) 40) Recursive relationships only exist for one-to-one relationships.**	FALSE Diff: 1 Page Ref: 172-174
15.	**15) The degree of a relationship is expressed as the relationship's maximum cardinality. (T or F)**	FALSE Diff: 3 Page Ref: 148-150
41.	**41) Which of the following is not a key element of an E-R model?** **A) Identifiers** **B) Entities** **C) Objects** **D) Attributes** **E) Relationships**	C Diff: 2 Page Ref: 145-149
42.	**42) Entities of a given type are grouped into a(n) _____.** **A) entity class** **B) entity relationship** **C) entity instance** **D) entity attribute** **E) None of the above.**	A Diff: 1 Page Ref: 145

43. **43) The occurrence of a particular entity is called a(n) _____.**
A) entity class
B) entity relationship
C) entity instance
D) entity attribute
E) None of the above.
C
Diff: 1 Page Ref: 145

44. **44) The characteristics of a thing are described by its _____.**
A) identifiers
B) entities
C) objects
D) attributes
E) relationships
D
Diff: 1 Page Ref: 146

45. **45) Attributes may be _____.**
A) composite
B) element
C) multivalued
D) A and C
E) B and C
D
Diff: 2 Page Ref: 146 and 150-151

46. **46) An identifier may be _____.**
A) composite
B) a single attribute
C) a relationship
D) A and B
E) A, B and C
D
Diff: 1 Page Ref: 146-147

47. **47) A composite attribute is an attribute that _____.**
A) is multivalued
B) describes a characteristic of the relationship
C) consists of a group of attributes
D) is calculated at run-time
E) is an identifier
C
Diff: 1 Page Ref: 147

48. **48) For a relationship to be considered a binary relationship it must satisfy which of the following conditions?**
A) It must involve exactly two entity classes.
B) It must have a maximum cardinality of 1:1.
C) It must have a maximum cardinality of 1:N.
D) A and B
E) A and C
A
Diff: 3 Page Ref: 147-149

49. **49) Maximum cardinality refers to _____.**
A) the most instances of one entity class that can be involved in a relationship instance with another entity class
B) the minimum number of entity classes involved in a relationship
C) whether or not an instance of one entity class is required to be related to an instance of another entity class
D) whether or not an entity is a weak entity
E) None of the above.
A
Diff: 2 Page Ref: 149

50. **50) You are given an E-R diagram with two entities, ORDER and CUSTOMER, as shown above, and are asked to draw the relationship between them. If a given customer can place only one order and a given order can be placed by at most one customer, which of the following should be indicated in the relationship symbol between the two entities?**
A) 0:1
B) 1:1
C) 1:N
D) N:1
E) N:M
B
Diff: 2 Page Ref: 149-150

51. **51) You are given an E-R diagram with two entities, ORDER and CUSTOMER, as shown above, and are asked to draw the relationship between them. If a given customer can place many orders and a given order can be placed by at most one customer, which of the following should be indicated in the relationship symbol between the two entities?**
A) 0:1
B) 1:1
C) 1:N
D) N:1
E) N:M
D
Diff: 3 Page Ref: 149-150

52. **52) You are given an E-R diagram with two entities, ORDER and CUSTOMER, as shown above, and are asked to draw the relationship between them. If a given customer can place many orders and a given order can be by one or more customers, which of the following should be indicated in the relationship symbol between the two entities?**
A) 0:1
B) 1:1
C) 1:N
D) N:1
E) N:M
E
Diff: 2 Page Ref: 149-150

53.	**53) Minimum cardinality refers to _____.** **A) the most instances of one entity class that can be involved in a relationship with one instance of another entity class** **B) the minimum number of entity classes involved in a relationship** **C) whether or not an instance of one entity class is required to be related to an instance of another entity class** **D) whether or not an entity is a weak entity** **E) None of the above.**	C Diff: 2 Page Ref: 150
54.	**54) In a minimum cardinality, minimums are generally stated as _____.** **A) 0** **B) 1** **C) N** **D) A or B** **E) A, B or C**	D Diff: 2 Page Ref: 150-151
55.	**55) A hash mark across the relationship line near an entity indicates _____.** **A) a maximum cardinality of "zero"** **B) a maximum cardinality of "one"** **C) a minimum cardinality of "optional"** **D) a minimum cardinality of "required"** **E) None of the above.**	D Diff: 2 Page Ref: 150-151
56.	**56) A circle across the relationship line near an entity indicates _____.** **A) a maximum cardinality of "zero"** **B) a maximum cardinality of "one"** **C) a minimum cardinality of "optional"** **D) a minimum cardinality of "required"** **E) None of the above.**	C Diff: 2 Page Ref: 150-151
57.	**57) You are given an E-R diagram with two entities, ORDER and CUSTOMER, as shown above. What does the symbol next to the ORDER entity indicate?** **A) A maximum cardinality of "zero"** **B) A maximum cardinality of "one"** **C) A minimum cardinality of "optional"** **D) A minimum cardinality of "required"** **E) None of the above.**	C Diff: 2 Page Ref: 150-151
58.	**58) You are given an E-R diagram with two entities, ORDER and CUSTOMER, as shown above. What does the symbol next to the CUSTOMER entity indicate?** **A) A maximum cardinality of "zero"** **B) A maximum cardinality of "one"** **C) A minimum cardinality of "optional"** **D) A minimum cardinality of "required"** **E) None of the above.**	D Diff: 2 Page Ref: 150-151
59.	**59) An entity whose identifier includes the identifier of another entity is a(n) _____.** **A) strong entity** **B) weak entity** **C) ID-dependent entity** **D) A and C** **E) B and C**	E Diff: 2 Page Ref: 153-154
60.	**60) An entity whose existence depends on the presence of another entity, but whose identifier does not include the identifier of the other entity is a(n) _____.** **A) strong entity** **B) weak entity** **C) ID-dependent entity** **D) A and C** **E) B and C**	B Diff: 2 Page Ref: 154-156
61.	**61) An entity that holds specialized attributes that distinguish it from one or more other similar entities is a(n) _____.** **A) supertype** **B) subtype** **C) discriminator** **D) A and C** **E) B and C**	B Diff: 1 Page Ref: 156-157
62.	**62) Which of the following is not true about subtype entities?** **A) Subtypes may be exclusive.** **B) The supertype and subtypes will have the same identifier.** **C) Subtypes are used to avoid a situation in which some attributes are required to be null.** **D) Subtypes have attributes that are required by the supertype.** **E) Subtypes can produce a closer-fitting data model.**	E Diff: 3 Page Ref: 156-157
63.	**63) An attribute that determines which subtype should be used is a(n) _____.** **A) supertype** **B) subtype** **C) discriminator** **D) A and C** **E) B and C**	C Diff: 1 Page Ref: 156-157
64.	**64) Discriminators can be _____.** **A) exclusive only** **B) inclusive only** **C) decisive only** **D) A or B** **E) B or C**	D Diff: 1 Page Ref: 156-157

65. **65) Supertype/subtype entities are said to have a(n) _____ relationship.**
A) HAS-A
B) IS-A
C) recursive
D) redundant
E) multivalue
B
Diff: 2
Page Ref: 157

66. **66) To represent an association pattern in an E-R model, _____.**
A) create a new ID-dependent entity with a 1:1 relationship to one other entity
B) create a new weak, but not ID-dependent entity with a 1:1 relationship to one other entity
C) create a new strong entity with a 1:1 relationship to one other entity
D) create a new ID-dependent entity with a 1:N relationship to one of two parent entities
E) create a new weak, but not ID-dependent entity with a 1:N relationship to one of two parent entities
D
Diff: 3
Page Ref: 162-164

67. **67) To represent a multivalued attribute in an E-R model, _____.**
A) create a new ID-dependent entity with a 1:N relationship
B) create a new weak, but not ID-dependent entity with a 1:N relationship
C) create a new strong entity with a 1:1 relationship
D) create a new ID-dependent entity with a 1:1 relationship
E) create a new weak, but not ID-dependent entity with a 1:1 relationship
A
Diff: 3
Page Ref: 164-165

68. **68) To represent an archetype/instance pattern in an E-R model, _____.**
A) create a new ID-dependent entity with a 1:N relationship
B) create a new weak, but not ID-dependent entity with a 1:N relationship
C) create a new strong entity with a 1:1 relationship
D) create a new ID-dependent entity with a 1:1 relationship
E) create a new weak, but not ID-dependent entity with a 1:1 relationship
A
Diff: 3
Page Ref: 166-168

69. **69) When an entity has a relationship to itself, we have a(n) _____.**
A) supertype/subtype relationship
B) archetype/instance relationship
C) recursive relationship
D) A or C
E) B or C
C
Diff: 1
Page Ref: 172

70. **70) Recursive relationships can have which of the following maximum cardinalities?**
A) 1:1
B) 1:N
C) N:M
D) A or B
E) A, B or C
E
Diff: 1 Page Ref: 172-174

71. **71) A(n) _____ is something that the users want to track in their environment.**
entity
Diff: 1 Page Ref: 145

72. **72) The method of constructing data models used in the text is the _____ model.**
extended entity-relationship (E-R)
Diff: 1 Page Ref: 145

73. **73) Entities of a given type are grouped into _____.**
entity classes
Diff: 1 Page Ref: 145

74. **74) A(n) _____ is the occurrence of a particular entity.**
entity instance
Diff: 1 Page Ref: 145

75. **75) A(n) _____ describes a characteristic of an entity.**
attribute
Diff: 1 Page Ref: 146

76. **76) A(n) _____ of an entity instance is one or more attributes that name or identify entity instances.**
identifier
Diff: 1 Page Ref: 146-147

77. **77) A(n) _____ is an identifier consisting of two or more attributes.**
composite identifier
Diff: 2 Page Ref: 147

78. **78) A(n) _____ serves the same role for an entity that a key does for a table.**
identifier
Diff: 3 Page Ref: 147

79. **79) Entities can be associated with one another in _____.**
relationships
Diff: 1 Page Ref: 147

80. **80) E-R modeling recognizes both relationship _____ and relationship _____.**
classes; instances
Diff: 2 Page Ref: 147

81. **81) A relationship class may involve _____ entity classes.**
two or more
Diff: 3 Page Ref: 148

82. **82) The _____ of a relationship is the number of entity classes in the relationship.**
degree
Diff: 2 Page Ref: 148

83.	**83) A _____ is a relationship between two entities.**	binary relationship Diff: 2 Page Ref: 148
84.	**84) Relationships of degree two are referred to as _____ relationships.**	binary Diff: 2 Page Ref: 148
85.	**85) When transforming a data model into a relational design, relationships of all degrees are treated as combinations of _____.**	binary relationships Diff: 3 Page Ref: 148
86.	**86) The principle difference between an entity and a table is that you can express the relationship between entities without using _____.**	foreign keys Diff: 3 Page Ref: 148
87.	**87) Relationships are classified by their _____.**	cardinality Diff: 1 Page Ref: 149
88.	**88) A relationship's _____ indicates the maximum number of entity instances that can participate in the relationship.**	maximum cardinality Diff: 2 Page Ref: 149
89.	**89) The notation 1:N shows the relationship's _____.**	maximum cardinality Diff: 2 Page Ref: 149
90.	**90) In a 1:N relationship, _____ is on the one side of the relationship, and the _____ is on the many side of the relationship.**	parent entity; child entity Diff: 2 Page Ref: 149
91.	**91) A relationship's _____ indicates the number of entity instances that must participate in the relationship.**	minimum cardinality Diff: 2 Page Ref: 149, 150
92.	**92) An entity whose identifier includes the identifier of another entity is called a(n) _____ entity.**	ID-dependent Diff: 2 Page Ref: 153-154
93.	**93) An entity that represents something that can exist on its own is called a(n) _____ entity.**	strong Diff: 1 Page Ref: 153
94.	**94) E-R models use a(n) _____ to connect entities that are ID-dependent.**	identifying relationship Diff: 2 Page Ref: 154
95.	**95) Entities containing optional sets of attributes are often represented using _____.**	subtypes Diff: 2 Page Ref: 156-157
96.	**96) The _____ entity contains the attributes that are common to all subtypes.**	supertype Diff: 1 Page Ref: 156-157
97.	**97) An attribute that determines which subtype is appropriate is called a _____.**	discriminator Diff: 2 Page Ref: 157
98.	**98) Subtypes can be _____ or _____.**	exclusive; inclusive Diff: 2 Page Ref: 157
99.	**99) Relationships between supertypes and subtypes are called _____ relationships.**	IS-A Diff: 2 Page Ref: 157
100.	**100) Relationships among an entity instance of a single entity class are called _____ relationships.**	recursive Diff: 2 Page Ref: 172