TRUE/FALSE

1. Data and information are essentially the same thing.

    ANS: F   PTS: 1   REF: 5

2. Data processing can be as simple as organizing data to reveal patterns.

    ANS: T   PTS: 1   REF: 6

3. We are now said to be entering the "knowledge age."

    ANS: T   PTS: 1   REF: 6

4. Information implies familiarity, awareness, and understanding knowledge as it applies to an environment.

    ANS: F   PTS: 1   REF: 6

5. Data constitute the building blocks of information.

    ANS: T   PTS: 1   REF: 7

6. Metadata present a more complete picture of the data in the database than the data itself.

    ANS: T   PTS: 1   REF: 7

7. The only way to access the data in a database is through the DBMS.

    ANS: T   PTS: 1   REF: 7

8. Database programming languages receive all application requests and translate them into the complex operations required to fulfill those requests.

    ANS: F   PTS: 1   REF: 7

9. The DBMS reveals much of the database's internal complexity to the application programs and users.

    ANS: F   PTS: 1   REF: 7

10. One disadvantage of the DBMS is that it increases the risk of data security breaches.

    ANS: F   PTS: 1   REF: 8

11. An operational database is sometimes referred to as an enterprise database.

    ANS: F   PTS: 1   REF: 9

12. A data warehouse can store data derived from many sources.

ANS: T   PTS: 1   REF: 10

13. The same data might be simultaneously structured and unstructured depending on the intended processing.

ANS: T   PTS: 1   REF: 10

14. Corporations use only structured data.

ANS: F   PTS: 1   REF: 10

15. Historically, a manual file system was composed of a system of file folders and filing cabinets.

ANS: T   PTS: 1   REF: 13

16. Initially the files within a computer file system were similar to manual files.

ANS: T   PTS: 1   REF: 14

17. Structural dependence exists when it is possible to make changes in the file structure without affecting the application program's ability to access the data.

ANS: F   PTS: 1   REF: 18

18. A query language is a procedural language.

ANS: F   PTS: 1   REF: 25

19. One disadvantage of a database system over previous data management approaches is increased costs.

ANS: T   PTS: 1   REF: 26

20. One advantage of a database system over previous data management approaches is that the database system is considerably less complex.

ANS: F   PTS: 1   REF: 26

MULTIPLE CHOICE

1. ____ is used to reveal the meaning of data.
   a. Raw facts   c. Formatting
   b. Knowledge   d. Information

   ANS: D   PTS: 1   REF: 7

2. Accurate, relevant, and timely information is the key to ____.
   a. data management   c. knowledge
   b. good decision making   d. understanding

   ANS: B   PTS: 1   REF: 7

3. ____ is the body of information and facts about a specific subject.
   a. Data   c. Knowledge
   b. Information   d. A database

ANS: C   PTS: 1   REF: 6

4. End-user data is ____.
    a. raw facts about the end-user
    b. raw facts of interest to the end-user
    c. data about data
    d. accurate, relevant and timely information

    ANS: B   PTS: 1   REF: 7

5. ____ provide(s) a description of the data characteristics and the set of relationships that link the data
    found within the database.
    a. Queries   c. Metadata
    b. End-user data   d. Information

    ANS: C   PTS: 1   REF: 7

6. The ____ serve(s) as the intermediary between the user and the database.
    a. DBMS   c. end-user data
    b. metadata   d. programming language

    ANS: A   PTS: 1   REF: 7

7. The database structure in a DBMS is stored as a ____.
    a. file   c. set of key/value pairs
    b. collection of files   d. collection of queries

    ANS: B   PTS: 1   REF: 7

8. A(n) ____ might be written by a programmer or it might be created through a DBMS utility program.
    a. query   c. database management system
    b. operating system   d. application program

    ANS: D   PTS: 1   REF: 7

9. ____ exists when different versions of the same data appear in different places.
    a. Data inconsistency   c. Better data integration
    b. Data consistency   d. Improved decision making

    ANS: A   PTS: 1   REF: 8

10. The response of the DBMS to a query is the ____.
    a. ad hoc query   c. query result set
    b. ad hoc response   d. integrated view of the data

    ANS: C   PTS: 1   REF: 8

11. A(n) ____ database is designed to support a company's day-to-day operations.
    a. desktop   c. enterprise
    b. workgroup   d. transactional

    ANS: D   PTS: 1   REF: 9

12. A(n) ____ database is used by an organization and supports many users across many departments.
    a. desktop   c. enterprise
    b. workgroup   d. transactional

ANS: C   PTS: 1   REF: 9

13. A(n) ____ database supports a relatively small number of users (usually fewer than 50) or a specific department within an organization.
    a. desktop   c. enterprise
    b. workgroup   d. transactional

    ANS: B   PTS: 1   REF: 9

14. A ____ database supports data distributed across several different sites.
    a. single-user   c. centralized
    b. multiuser   d. distributed

    ANS: D   PTS: 1   REF: 9

15. A workgroup database is a(n)____ database.
    a. single-user   c. enterprise
    b. multiuser   d. distributed

    ANS: B   PTS: 1   REF: 9

16. A desktop database is a ____ database.
    a. single-user   c. workgroup
    b. multiuser   d. distributed

    ANS: A   PTS: 1   REF: 9

17. Most decision-support data are based on historical data obtained from ____.
    a. operational databases   c. enterprise databases
    b. data warehouses   d. workgroup databases

    ANS: A   PTS: 1   REF: 10

18. The ____ structure is quite different from that of an operational or transactional database.
    a. data warehouse   c. enterprise database
    b. workgroup database   d. distributed database

    ANS: A   PTS: 1   REF: 10

19. ____ data exist in the format in which they were collected.
    a. Structured   c. Unstructured
    b. Semistructured   d. Historical

    ANS: C   PTS: 1   REF: 10

20. ____ data exist in a format that does not lend itself to processing that yields information.
    a. Structured   c. Unstructured
    b. Semistructured   d. Historical

    ANS: C   PTS: 1   REF: 10

21. ____ data are the result of formatting to facilitate storage, use and generation of information.
    a. Structured   c. Unstructured
    b. Semistructured   d. Historical

    ANS: A   PTS: 1   REF: 10

22. Most data you encounter is best classified as _____.
    a. structured   c. unstructured
    b. semistructured   d. historical

    ANS: B   PTS: 1   REF: 10

23. Which of the following is an example of structured data?
    a. A Web page   c. A memo
    b. An e-mail   d. A spreadsheet

    ANS: D   PTS: 1   REF: 10

24. XML data is _____.
    a. structured   c. unstructured
    b. multistructured   d. semistructured

    ANS: D   PTS: 1   REF: 10

25. The organization of the data within the folders in a manual file system was determined by _____.
    a. the date of creation   c. the title of the documents in the folder
    b. its expected use   d. the data processing specialist

    ANS: B   PTS: 1   REF: 13

26. A _____ is a logically connected set of one or more fields that describes a person, place, or thing.
    a. database   c. record
    b. column   d. file

    ANS: C   PTS: 1   REF: 14

27. A _____ is a collection of related records.
    a. database   c. column
    b. field   d. file

    ANS: D   PTS: 1   REF: 14

28. A _____ is a character or group of characters that has a specific meaning.
    a. database   c. record
    b. field   d. file

    ANS: B   PTS: 1   REF: 14

29. The phrase _____ refers to an organization of components that define and regulate the collection, storage, management and use of data within a database environment.
    a. database management system   c. management system
    b. database management   d. database system

    ANS: D   PTS: 1   REF: 21

30. _____ relates to the activities that make the database perform more efficiently in terms of storage and access speed.
    a. Performance tuning   c. Query access
    b. Database design   d. Database management

    ANS: A   PTS: 1   REF: 24

COMPLETION

1. _____ is the result of processing raw data to reveal its meaning.

   ANS: Information

   PTS: 1   REF: 6

2. To reveal meaning, information requires _____.

   ANS: context

   PTS: 1   REF: 6

3. Raw data must be properly _____ for storage, processing and presentation.

   ANS: formatted

   PTS: 1   REF: 6

4. Data _____ is a discipline that focuses on proper generation, storage and retrieval of data.

   ANS: management

   PTS: 1   REF: 7

5. _____ is data about data through which the end-user data are integrated and managed.

   ANS: Metadata

   PTS: 1   REF: 7

6. A(n) _____ is a collection of programs that manages the database structure and controls access to the data stored in the database.

   ANS:
   DBMS (database management system)
   database management system (DBMS)
   database management system
   DBMS

   PTS: 1   REF: 7

7. A(n) _____ is a specific request issued to the DBMS for data manipulation.

   ANS: query

   PTS: 1   REF: 8

8. _____ databases focus primarily on storing data used to generate information required to make tactical or strategic decisions.

ANS: Analytical

PTS: 1   REF: 9

9. _____ is a special language used to represent and manipulate data elements in a textual format.

ANS:
XML (Extensible Markup Language)
Extensible Markup Language (XML)
Extensible Markup Language
XML

PTS: 1   REF: 10

10. In early computer file systems, a(n) _____ was hired to create a computer-based system that would track data and produce required reports.

ANS:
data processing (DP) specialist
data processing specialist
DP specialist

PTS: 1   REF: 14

11. _____ exists when it is possible to make changes in the data storage characteristics without affecting the application program's ability to access the data.

ANS: Data independence

PTS: 1   REF: 18

12. The term _____ refers to scattered locations storing the same basic data.

ANS: islands of information

PTS: 1   REF: 18

13. _____ exists when different and conflicting versions of the same data appear in different places.

ANS: Data inconsistency

PTS: 1   REF: 18

14. _____ exists when the same data are stored unnecessarily at different places.

ANS: Data redundancy

PTS: 1   REF: 18

15. A(n) _____ develops when all required changes in the redundant data are not made successfully.

ANS:
data anomaly
anomaly

PTS: 1   REF: 19

ESSAY

1. Describe what metadata are and what value they provide to the database system.

   ANS:
   The metadata describe the data characteristics and the set of relationships that links the data found within the database. For example, the metadata component stores information such as the name of each data element, the type of values (numeric, dates, or text) stored on each data element, and whether the data element can be left empty. The metadata provide information that complements and expands the value and use of the data. In short, metadata present a more complete picture of the data in the database. Given the characteristics of metadata, you might hear a database described as a "collection of self-describing data."

   PTS: 1   REF: 7

2. What are the advantages of having the DBMS between the end user's applications and the database?

   ANS:
   Having a DBMS between the end user's applications and the database offers some important advantages. First, the DBMS enables the data in the database to be shared among multiple applications or users. Second, the DBMS integrates the many different users' views of the data into a single all-encompassing data repository.

   PTS: 1   REF: 7

3. Discuss some considerations when designing a database.

   ANS:
   Proper database design requires the designer to identify precisely the database's expected use. Designing a transactional database emphasizes accurate and consistent data and operational speed. Designing a data warehouse database emphasizes the use of historical and aggregated data. Designing a database to be used in a centralized, single-user environment requires a different approach from that used in the design of a distributed, multiuser database.

Designing appropriate data repositories of integrated information using the two-dimensional table structures found in most databases is a process of decomposition. The integrated data must be decomposed properly into its constituent parts, with each part stored in its own table. Further, the relationships between these tables must be carefully considered and implemented so the integrated view of the data can be re-created later as information for the end user. A welldesigned database facilitates data management and generates accurate and valuable information. A poorly designed database is likely to become a breeding ground for difficult-to-trace errors that may lead to bad decision making—and bad decision making can lead to the failure of an organization. Database design is simply too important to be left to luck. That's why college students study database design, why organizations of all types and sizes send personnel to database design seminars, and why database design consultants often make an excellent living.

PTS: 1   REF: 13

4. What are some reasons for studying file systems?

ANS:
A brief explanation of the evolution of file system data processing can be helpful in understanding the data access limitations that databases attempt to overcome. Understanding these limitations is relevant to database designers and developers because database technologies do not make these problems magically disappear—database technologies simply make it easier to create solutions that avoid these problems. Creating database designs that avoid the pitfalls of earlier systems requires that the designer understand these problems and how to avoid them; otherwise, the database technologies are no better (and are potentially even worse!) than the technologies and techniques they have replaced.

PTS: 1   REF: 13

5. Describe the five types of users identified in a database system.

ANS:
System administrators oversee the database system's general operations.
Database administrators, also known as DBAs, manage the DBMS and ensure that the database is functioning properly.
Database designers design the database structure. They are, in effect, the database architects. If the database design is poor, even the best application programmers and the most dedicated DBAs cannot produce a useful database environment. Because organizations strive to optimize their data resources, the database designer's job description has expanded to cover new dimensions and growing responsibilities.
System analysts and programmers design and implement the application programs. They design and create the data-entry screens, reports, and procedures through which end users access and manipulate the database's data.
End users are the people who use the application programs to run the organization's daily operations. For example, sales clerks, supervisors, managers, and directors are all classified as end users. High-level end users employ the information obtained from the database to make tactical and strategic business decisions.

PTS: 1   REF: 22