

## Model Answer MCA 3rd DEC 2013 AS-2351

### 1. State True or False:

- (a) As legacy file-based systems and applications become candidates for re-engineering, the trend is overwhelmingly in favour of replacing file-based systems and applications with database systems and applications.

Answer: **True** LOD: Easy

- (b) As enterprise systems and applications are re-engineered, the trend is overwhelmingly in favour of replacing database systems and applications with legacy file-based systems and applications.

Answer: **False** LOD: Medium

Rationale: As legacy file-based systems and applications become candidates for re-engineering, the trend is overwhelmingly in favour of replacing file-based systems and applications with database systems and applications.

- (c) The principal advantage of database systems is the ability to share the same data across multiple applications and systems.

Answer: **True** LOD: Easy

- (d) A principal advantage of the database approach is that you can build a single super-database that contains all data items of interest to an organization.

Answer: **False** LOD: Medium

Rationale: A common misconception about the database approach is that you can build a single super-database that contains all data items of interest to an organization. This notion, however desirable, is not currently practical.

- (e) Most organizations build several databases, each one sharing data with several information systems. Thus, there will be some redundancy between databases.

Answer: **True** LOD: Easy

- (f) Most organizations build several databases leading to significant and uncontrolled redundancy between databases.

Answer: **False** LOD: Medium

Rationale: Most organizations build several databases, each one sharing data with several information systems. Thus, there will be some redundancy between databases. However, this redundancy is both greatly reduced and ultimately, controlled.

- (g) Database technology offers the advantage of storing data in flexible formats.

Answer: **True** LOD: Easy

- (h) A disadvantage of database technology is the lack of flexibility in data storage formats.

Answer: **False** LOD: Medium

Rationale: Database technology offers the advantage of storing data in flexible formats.

- (i) Data independence refers to the fact that databases are defined separately from the information systems and application programs that will use them.

Answer: **True** LOD: Medium

- (j) Database technology provides superior scalability, meaning that the database and the systems that use it can be grown or expanded to meet the changing needs of an organization.

Answer: **True** LOD: Easy

### 2. Fill in the blanks

- (a) \_\_\_\_\_ of data refers to the physical duplication of entire tables to multiple locations.

Answer: **Replication** LOD: Hard

- (b) \_\_\_\_\_ of data offers performance and accessibility advantages and reduces network traffic, but it also increases the complexity of data integrity and requires more physical storage.

Answer: **Replication** LOD: Hard

- (c) \_\_\_\_\_ is the simplest and easiest solution to maintain; however, it violates a data management rule that has become important to many data administrators and users - data should be located as closely as possible to its users.  
Answer: **Centralization** LOD: Hard
- (d) A(n) \_\_\_\_\_ is a collection of similar records.  
Answer: **file** or **table** LOD: Medium
- (e) A(n) \_\_\_\_\_ is a collection of interrelated files.  
Answer: **database** LOD: Medium
- (f) A historical \_\_\_\_\_ (advantage or disadvantage) of using conventional files has been processing speed. They can be optimized for the access of the application.  
Answer: **advantage** LOD: Medium
- (g) Duplication of data items in multiple files is normally cited as the principal disadvantage of \_\_\_\_\_(file-based or database) systems.  
Answer: **file-based** LOD: Medium
- (h) \_\_\_\_\_ is a three-step technique that places the data model into first normal form, second normal form and third normal form.  
Answer: **Normalization** LOD: Hard
- (i) Once a database design and its corresponding schema have been completed, a \_\_\_\_\_ database can usually be generated very quickly.  
Answer: **prototype** LOD: Hard
- (j) Conventional files are relatively \_\_\_\_\_ (easy or hard) to design and implement because they are normally designed for use with a single application or information system.  
Answer: **easy** LOD: Medium

3. Instead of having a fixed answer , this question will have multiple answers depending on the imagining power of the students. In **Banking System**, students have to find out multiple **entity sets**(such nouns for which a separate table is mandatory), different types of **attribute** mentioned in question, **relationships** among these entity sets, atleast one **specialization** and **weak entity** and its relationship.

Students should be aware of notations used for above objects. They should be aware how to plot them according to the relations. Then they have to draw an E-R Diagram which should be neat and clean with the **cardinality** mentioned on the connectives.

Name of entity sets and their attributes are not fixed. The diagram should be readable from *left to right* and *top to bottom*.

4. (a) The ability to modify a scheme definition in one level without affecting a scheme definition in a higher level is called data independence.
- (b) There are two types of data independence:
- i. Physical data independence
    - The ability to modify the physical scheme without causing application programs to be rewritten
    - Modifications at this level are usually to improve performance
  - ii. Logical data independence
    - The ability to modify the conceptual scheme without causing application programs to be rewritten
    - Usually done when logical structure of database is altered
- (c) Distributed database is a collection of multiple logically interrelated databases distributed over a computer network, and a distributed database management system as a software system that manages a distributed databses while making distribution transparent to the user.