1. What is the difference between controlled and uncontrolled redundancy?

Redundancy is repetition or duplication of information in several tables for more than once. Controlled redundancy is when the duplicated information is consistent among all the tables whereas uncontrolled redundancy is when the data is inconsistent. The database has controlled redundancy while the disadvantage of file system is uncontrolled redundancy.

2. Give 2 or more examples of systems in which it may make sense to use traditional file processing instead of a database approach. Explain why you chose these systems.

A library system, any system to monitor the lab with people’s entry and exit, a departmental store database. I prefer traditional file processing to database approach as it is not complicated to create the files and the cost is also less.

3. This chapter has described several major advantages of a database system. What are two disadvantages?

The disadvantages of database system are;

1. It is complex to set up.
2. It is expensive.
3. It requires initial training.

4. List four to six major steps that you would take in setting up a database for a particular enterprise.

The major steps included in setting up a database for an enterprise are;

1. Gather the requirements from the user.
2. Validate the requirements.
3. Create the database design.
4. Create the database, tables, functions, stored procedures
5. Create relationships between the tables using the primary keys
6. Create constraints.

5. List at least 3 different entities that a university would maintain, beyond those listed in the chapter.

The entities are;

1. Teacher’s details
2. Timetable
3. Exam schedules

6. Explain the concept of physical data independence and its importance in database systems.

Physical data independence is the one in which physical schema is modified without affecting the logical schema. It is important in database system as the logical schema should not be affected which in turn affects the stored procedures and other programming.

7. What are the main functions of a database administrator?

The some of the main functions of a Database administrator is to maintain the database, storage, tune performance, profiling etc.

8. Explain the difference between two-tier and three-tier architectures. Why would you use one over the other?

Two tier architecture consist of two systems; one with the client and other with the server. The server will have all the data stored. The client will have the applications installed in them.

Three tier architecture is a client server architecture with a middle layer. The business logic, view and data are maintained separately.

9. Why are many organizations using object-oriented databases instead of relational ones?

Object oriented database stores the information in the form of objects and classes which is useful for object-oriented programming.

10. Define the following terms:

a. Atomicity: It is one of the ACID properties. It is a series of operations that must either happen completely or not at all happen.

b. Concurrency control: Simultaneous access by various users must be controlled to avoid inconsistency in data.

c. DBMS: Database management system is a general-purpose software used to manage a database.

d. Metadata: It is the data about data. It stores the database definitions. It is a database dictionary.

e. Schema: Logical structure of the database that consist of physical and logical schema.