First Semester - Question Bank
Department of CS(E) and IT
Database Management Systems

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Each question carries 0.2 mark.

Q1) Choose the correct or best alternative in the following:

1. The DBMS acts as an interface between what two components of an enterprise-class database system?
A. Database application and the database
B. Data and the database
C. The user and the database application
D. Database application and SQL

2. The file in DBMS is called as ..... in RDBMS.
A) Query
B) Schema
C) Table
D) Object

3. The ..... refers to the way data is organized in and accessible from DBMS.

A) Database system

B) Data organization

C) Data sharing

D) Data model

4. The candidate key is that you choose to identify each row uniquely is called ……..

A) Alternate Key

B) Primary Key

C) Foreign Key

D) None of the above

5. Which of the following are the properties of entities?

A. Groups

B. Table

C. Attributes

D. Switchboards

6. ..... data type can store unstructured data

A. Raw

B. Char

C. Numeric

D. Varchar

7. The following are functions of a DBMS except _____ .

A. Creating And Processing Forms
B. Creating databases
C. Processing data
D. Administrating databases

8. Helping people keep track of things is the purpose of a(n) _____ .

A. Database
B. Table
C. Instance
D. Relationship

9. An _____ is a set of entities of the same type that share the same properties, or attributes .

a) Entity set
b) Attribute set
c) Relation set
d) Entity model

10. Entity is a

a) Object of relation
b) Present working model
c) Thing in real world
d) Model of relation

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True or False

1. A database has data and relationships.

A. True B. False

2. A database has a built-in capability to create, process and administer itself.

A. True B. False

3. A database design may be based on existing data.

A. True B. False

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Q2) What is a database? Describe the advantages and disadvantages of using of DBMS.

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Q3) Define database management system and draw the architecture of the database system.

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Q4) Write a short notes on the following:

1. Data file
2. Relational Database Software
3. Flat-file Database Software

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Q5) List the significant differences between a file processing system and a Database approach.

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Q6) Information about a bank is about customers and their account. Customer has a name, address which consists of house number, area and city, and one or more phone numbers. Account has number, type and balance. We need to record customers who own an account. Account can be held individually or jointly. An account cannot exist without a customer.
Arrive at an E-R diagram. Clearly indicate attributes, keys, the cardinality ratios and participation constraints.

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Q7) Differentiate between logical database design and physical database design. Show how this separation leads to data independence.

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Q8) Differentiate between various levels of data abstraction.

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Q9) Explain five duties of Database administrator.

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Q10) Draw and explain the three level architecture of the database system.

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Q11) What is data independence? Explain the difference between physical and logical data independence.

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Q12) Explain the concepts of relational data model. Also discuss its advantages and disadvantages.

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Q13) List any two significant differences between a file processing system and a DBMS.

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Q14) Explain the followings:

1. A data model.
2. Key
3. Disadvantages of file based systems:

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Q15) Explain the following terms briefly: **attribute**, **domain**, **entity**, **relationship**, **entity set**, **relationship set**, **one-to-many relationship**, **many-to-many relationship**.

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Q16) Explain the integrity constraints: Not Null, Unique, Primary Key with an example each. Is the combination 'Not Null, Primary Key' a valid combination. Justify.

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Q17) What is a key? Explain Candidate Key, Alternate Key and Foreign Key.

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Q18) Explain the followings:

- Types of attributes.
- Integrity Constraints

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Q19) What is an information system? What is its purpose?

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Q20) Discuss the distinction between data and information.

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Q21) Discuss the distinction between centralized and decentralized conceptual database design.

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Q22) What steps are required in the development of an ER diagram?

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Q23) List and briefly explain the activities involved in the verification of an ER model.

The ER Model Verification Process

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Q24) What is RAID?

RAID stands for Redundant Array of Independent Disks this technology is now used in almost all the IT organizations looking for data redundancy and better performance. It combines multiple available disks into 1 or more drives and gives you the ability to survive one or more drive failures depending upon the RAID level used.

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Q25) what are the advantages and disadvantages of having RAID 0 and 1 technologies?

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Q26) what are the advantages and disadvantages of having RAID 5 and 6 technologies?

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Q27) Whatever the database design philosophy, a good designer uses a specific and ordered set of steps through which the database design problem is approached. The steps are generally based on three phases: analysis, design, and implementation. Explain the activities of these phases.

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Q28) The SDLC is not a function of the information collected. Regardless of the extent of the design or its specific implementation, the SDLC phases remain very important, explain theses phases.

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Q29) What are the different types of database management system users? Discuss the main activities of each.

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Q30) Define the following terms

1. A distributed database
2. Conceptual Schema
3. A relation

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Q31) Describe entity integrity and referential integrity. Give an example of each.

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Q32) What are the four main characteristics of the database approach?

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Q33) Discuss with examples about various types of attributes present in the ER model.

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Q34) Information about films contains information about movies, stars and studios. Movies have a title, year of production, length and the film type. Stars have a name and address. Studios have a owner and a banner. Movies are shot in studios which own them. A movie is shot in only one studio. Stars are connected to one or more studios but can act in any film which may or may not be owned by the studio. Draw an E-R diagram. Clearly indicate attributes, the cardinality ratios and participation constraints.

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Q35) The company you work for wants to digitize their time cards, to design the database for submitting and approving time cards. Draw the database ER diagram with the following information:

• A timecard should have hours worked and date submitted
• Each timecard is associated with exactly one employee
• Each timecard should have a unique id
• Each timecard has a status: it is either approved, not approved, or pending
• Each employee has a unique id
• Each employee has a name and address.

• Each employee submits a time card every pay period. i.e. In 1 year, they will submit multiple time cards
• Each employee either has direct deposit or physical check as their method of payment
• Each employee is associated with exactly one manager
• Each manager has a unique id and a name
• Each manager is in charge of multiple employees
• Each manager approves time cards for multiple employees

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Q36) In an organization several projects are undertaken. Each project can employ one or more employees. Each employee can work on one or more projects. Each project is undertaken on the required of client. A client can request for several projects. Each project has only one client. A project can use a number of items and an item may be used by several projects. Suppose that you have the following relational schema. Draw an E-R diagram.
The relational schema has following tables
(i) Employee (Empno, Name, Salary, Desig)
(ii) Project (P_id, Pname, P-desc)
(iii) Item (I_id, Iname, I-desc)
(iv) Clients (C_id,Cname, Address)
(v) Works_on (Empno, P_id)
(vi) Requests (P_id, C_id)
(vii) Requires (P_id, I_id)

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Q37) In an organisation several projects are undertaken. Each project can employ one or more employees. Each employee can work on one or more projects. Each project is undertaken on the request of client. A client can request for several projects. Each project has only one client. A project can use a number of items and a item may be used by several projects. Suppose that you have the following relational schema. Draw an E-R diagram.
The relational schema has following tables
1) Project (Pid, Pname)
2) Employee (Empid, Ename)
3) Client (Cno, Cname)
4) Item (I type, I name)
5) Use (Pid, I type)
6) Work (Pid, Empid)
7) Request (Pid, Cno)

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Q38) Discuss with examples about various types of database transaction serializability.

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Q39) Define a transaction in a database system and explain the different properties of a database transaction.

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Q40) Define a data abstraction in a database system and explain the different kinds of abstractions.

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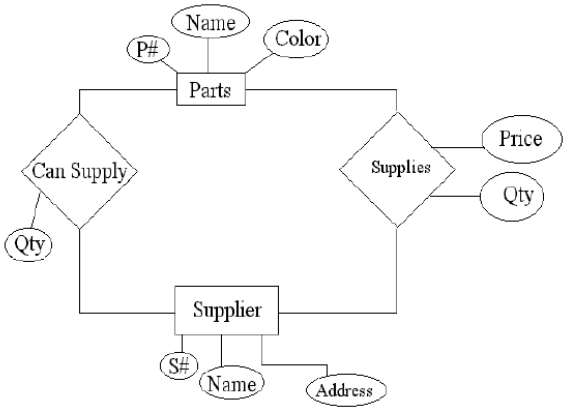
Q41) Map the following ER diagram to a relational database. Give the relation names and attributes in them. Also mention the primary key and foreign keys if any for each table.



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Q42) Differentiate between Candidate and super key.

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Q43) Consider three transactions: T1, T2 and T3 . Draw the precedence graph for the following schedule consisting of these three transactions and determine whether it is serializable. If so, give its serial order(s).

Time	T_1	T_2	T_3
t_1 :			read(Y)
t_2 :			read(Z)
t_3 :	read(X)		
t_4 :	write(X)		
t_5 :			write(Y)
t_6 :			write(Z)
t_7 :		read(Z)	
t_8 :	read(Y)		
t_9 :	write(Y)		
t_{10} :		read(Y)	
t_{11} :		write(Y)	
t_{12} :		read(X)	
t_{13} :		write(X)	

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