Question Bank

Two Marks Questions & Answers

1. Define DBMS

DBMS is Data Base Management System, which consists of a collection of interrelated data and a set of programs to access those data. The collection of data is database. These are designed to manage large bodies of information.

2. Give the disadvantages of file processing system.

a. Data redundancy and inconsistency
b. Difficult in accessing data
c. Data isolation
d. Integrity problems
e. Concurrent access anomalies
f. Security problems

3. What are the three levels of abstraction?

a. Physical level
b. Logical level
c. View level

4. What is physical, logical and view level data abstraction.

a. The lowest level of abstraction that describes how the data is stored is physical level data abstraction.
b. The next higher level of abstraction that describes what data are stored in the database
and the relationship among those data is logical level data abstraction.
c. The highest level of abstraction describes only part of the entire database is view level.

5. What do you mean by instances and schemas.

The collection of information stored in the database at a particular moment is called instance. The overall design of the database is called the database schema.

6. What are the two levels of independence?

a. Physical data independence
b. Logical data independence

7. What is an entity relationship model?

The entity relationship model is a collection of objects called entities and relationship among those entities. An entity is a thing or object in the real world entity.

8. Define data model.

A collection of conceptual tools for describing data, data relationships, data semantics and consistency constraints for underlying the structure of a database is data model.

9. What are attributes?

An entity is represented by a set of attribute. Attribute are descriptive properties possessed by each member of an entity set.

10. Define single valued and multivalued attributes.

Single valued attributes: Attributes with a single value for a particular entity are called single valued attributes.

Multivalued attributes : Attributes with a set of value for a particular entity are called multivalued attributes.

11,Define Database Recovery.

It is a process of salvaging data from damaged, failed, corrupted secondary storage media when it cannot accessed normally. Recovery may be required due to physical damage to the storage device or logical damage to the file system that prevents it from being mounted by the host operation system.

12. What is a transaction?

A transaction is a collection of operations that performs a single logical function in a database application. Each transaction is a unit of both atomicity and consistency.

14. What are the basic notations available in E-R model?

a. Entity sets.
b. Relationship sets
c. Attributes.

15. What do you mean by simple and composite attribute.

The attributes that can be divided into further is simple (eg. Customer city). The attributes that have subparts is composite attribute(eg. Customer name with first name, middle name and last name).

16. Write the two categories of the query language.

a. Procedural
b. Non Procedural

17.What is meant by normalization of data?

 It is a process of analyzing the given relation schemas based set of functional dependencies and primary key to achieve the properties ,minimizing redundancy.

18. What is meant by functional dependencies?

To test relations to see whether they are legal under a given set of functional dependencies. To specify constraints on the set of legal relations.

19.Define lock.

Lock is the most common used to implement the requirement is to allow a transaction to access a data item only if it is currently holding a lock on that item.

20.What is a recovery scheme?

An integral part of a database system is a recovery scheme that can restore the database to the consistent state that existed before the failure.

UNIT II

1.Name some partitioning techniques.

Round Robin, Hash partitioning, Range partitioning.

2.. What are the classifications of the skew?

a. Attribute_value skew
b. Partition skew

3. What is Inter query parallelism?

In Inter query parallelism, different queries or transactions execute in parallel with one another. This form of parallelism can increase transaction throughput.

4. What is Intra query parallelism?

Intra query parallelism refers to the execution of a single query in parallel on multiple processors and disks.

5. Execution of a single query can be parallelized in two ways. What are they?

a. Intra operation Parallelism
b. Interoperation Parallelism

6. What is data parallism?

Execution of the same operation in parallel on different sets of data is called data parallism.

7. What are the two forms of interoperation parallelism?

a. Pipelined parallelism
b. Independent parallelism

8. What is independent parallelism?

Operations in a query expression that do not depend on one another can be executed in parallel. This form of parallelism is called independent parallelism.

9. Write some approaches for storing the relation in distributed data storage?

a. Replication
b. Fragmentation
c. Replication and fragmentation

10. Write the types of fragmentation?

 Horizontal fragmentation, vertical fragmentation, mixed fragmentation.

11. Short notes on Horizontal fragmentation.

The relation r is partitioned into a number of subsets r1,r2,…rn. Each tuple of relation r must belong to at least one of the fragments, so that the original relation can be reconstructed, if needed.

 To reconstruct fragment ri as follows:

i. ri= çpi (r)

where r is a global relation, pi is a predicate.

12. Short notes on vertical fragmentation.

In its simplest form, vertical fragmentation is the same as decomposition. Each fragment ri of r is defined by

ri=πRi (r)

 we can reconstruct the relation r from the fragments by taking natural join

r=r1 r2 r3 r4 … rn

13. Write the issues of network transparency?

a. Naming of data items
b. Replication of data items
c. Fragmentation of data items
d. Location of fragments and replicas

14. Write the two disadvantages of naming of data items?

First, poor performance. Second, if the name server crashes, it may not be possible for any site in the distributed system to continue to run.

15. What is a global and local transaction?

The local transaction is those that access and update data in only one local database; the global transaction is those that access and update data in several local database.

16. Write the subsystems of each site?

The transaction manager, the transaction coordinator

17. What are the failure types of a system?

Failure of a site
Loss of messages
Failure of a communication link
Network partition

18. Name some network topology.

Fully connected network
Partially connected network
Tree structured network
Star network
Ring network

19. What are the different ways for handling the failure?

a. Retransmission of a message.
b. Reconfigure the system.

20. What is backup coordinator?

A backup coordinator is a site that, in addition to other tasks, maintains enough information locally to allow it to assume the role of coordinator with minimal disruption to the distributed system. The main difference between the coordinator and its backup is that the backup does not take any action that affects other sites.

21. What is multidatabase system?

Manipulation of information located in a heterogeneous database requires an additional software layer on top of existing database system. This software layer is called multidatabase system.

22. What are the two types of transaction in a multidatabase system?

Local transaction, Global transaction.

UNIT III

1.What are the goals of OODB?

The goals of OODB are:

i) To maintain direct correspondence between real world and database object, so that the object will not loose its integrity and identity.

ii) The objects, which are complex, need not be scattered in the database, and hence to create complex object structures.

2. What are persistent objects and transient objects?

Objects in OOPL exist only during program execution and are hence called transient objects.

Objects in OODB can be extended, so that they can exist in permanent storage even after the program termination. They are called persistent objects.

3. What is OID?

OO databases provide a unique system generated object-identifier (OID) for each object. Its value is not visible to the external user and they are used to create and manage inter-object references.

4.What are the characteristics an OID possess? (What are the properties of OID?)

The characteristics of OID are:

i) Immutable – They do not change.
ii) An OID can be used only once.

80. What are the two components of object?

The two components of object are:

1) State(Value) and 2) Behavior(Operation).

5. Write the formal structure of an object.

An object is normally represented as a triple O = (i, c, v)

i- The unique object identifier. 8
c- The type constructor.
v- The object state or current value.

6. What are the six type constructors?

The six type constructors are : Atom, Tuple, Array, List, Bag and Set.

Array, List, Bag and Set are called Collection types or Bulk types.

7. Explain each type constructor.

Atom – If c is atom, the value v is atomic and it is supported by the system.

Set – The IODs for the set of objects are of same type. This does not allow duplicates.

Array - The IODs for the set of objects are single dimensional array of object identifier.

List – The list is similar to set, except that the OIDs are ordered.

Bag – Bag is also called multiset. This can also contain duplicate elements.

8. What are identical objects and equal objects?

Two objects are said to have equal states, if their states at the atomic levels are the same, but the values are reached through distinct objects.

 Two objects are said to be in identical states, if the objects are identical even though the objects themselves are not as they have distinct OIDs.

9. What is encapsulation?

Encapsulation is also called information hiding, which is related to the concepts of abstract data types. This defines the behavior of a types of object based on the operation it has to perform.

The internal structure of object is hidden and the object is accessible only through the predefined operations.

10. How can an operation be defined in encapsulation?

The operation defined in encapsulation concept has two parts:

i) Signature or interface of the operation – It specifies the operation name and

arguments.

ii) Method or Body of the operation – It specifies the implementation of operation.

11. What are hidden and visible attributes?

Visible attributes are the attributes that may be directly accessed for reading by external operators or by high-level query language. Hidden attributes are the attributes that are completely encapsulated and can be only applied through predefined operations.

12. What is object constructor, destructor and object modifier?

Object constructors are the operations, which are used to create new object. Object destructors are used to destroy objects. The object modifiers are the operations declared to modify various attributes of an object.

13. What are the methods for creating persistent objects?

Persistent objects are the objects stored in databases that persist even after the program termination. The techniques to create persistence objects are: Naming and reachability.

Naming mechanism involves giving an object a unique persistent name through which it can be retrieved with this and other programs. The named persistent objects are the entry points to the database.

The reachability mechanism works by making the object reachable from some other persistent object. Making the object to be referenced by another persistent object B can make an object as persistent.

14. What is inheritance?

Inheritance is the concept of OO systems, that permits specification of new types or classes that inherit their structure and operations from previously defines types or classes.

15. What is sub types and super type?

The subtype is the type, which must be formed from already existing type by inheriting some of its features. The super type is the type from which the functions are inherited.

16. What is operator polymorphism ? (Operator overloading).

It refers to the operation's ability to be applied to different types of objects. The operation's name may refer to each distinct implementation, depending on the type of objects it is applied to.

17. What is late binding?

If the type of object to which the function is applied is not known until runtime and in this case the function must check the type of object and then invoke the appropriate method. This is called late binding.

18. What is early binding?

If the types of object for invoking the function is known at the compile time itself it is said to be early binding.

19. What is ODMG model?

The ODMG model is intended to allow portability of application among object database products.It provides a common model for these products by defining extensions to the MNG object model that support object database requirements.

20.What is JASMINE?

Jasmine is an object oriented database co developed by Fujitsu and computer Associates.

UNIT IV

1. Define Data mining

Data mining refers to the mining or discovery of new information in terms of patterns or rules from vast amount of data.

2. Write the relationship between data warehouse and data mining.

i) Data warehouse is aggregate and summarized collection of data that makes data mining efficient.
ii) Data warehouse supports decision-making
iii) Data mining helps to extract meaningful new patterns iv)
Data mining can be applied to operational databases.

3. What are the different phases in Knowledge discovery?

i) Data Selection – Selecting data about specific item or category
ii) Data cleansing – Correcting invalid data or eliminating records
iii) Enrichment – Enhancing data with additional sources of information
iv) Data transformation and Encoding – Reducing amount of data by generalization
v) Data mining – Techniques to mine different rules and patterns
vi) Reporting and Display of discovered information – Displaying result as listings, graphical outputs, summary tables or visualizations in a user understandable manner

4. What are the results of data mining? Give examples for each.

i) Association rules – Whenever the customer buys a video equipment he is likely to buy electronic gadget.
ii) Sequential Patterns – If a customer buys camera, with in three months he will buy photographic accessories.
iii) Classification trees – Customers of a supermarket can be classified based on the frequency of visits.

5. What are the goals of Data mining?

i) Prediction – how certain attributes will behave in future.
ii) Identification - To identify existence of certain item, event or activity.
iii) Classification – Partitioning data in to different classes, based on combination of parameters.
iv) Optimization – Optimizing use of limited resources such as time, space, money and materials to maximize sales, profit.

6. What is knowledge? What are its types?

Knowledge is the degree of intelligence. It can be classified as inductive knowledge and deductive knowledge.

7. What are the ways to represent knowledge extracted during data mining?

i) Association rules
ii) Classification hierarchies
iii) Sequential patterns
iv) Patterns with in time series
v) Categorization and Segmentation .

8. What is Association rules?

Association rules is the result of data mining. Association rule is of the form X=>Y. If customer buys X, he/She is likely to buy Y.

9. Why mining of association rules are more complicated?

i) The relationship between item sets is very large and the volume of transaction is very high as well.
ii) Transactions show variations based on the factors like geographic locations, seasons and make sampling difficult.
iii) Item classifications exist along multiple dimensions
iv) Quality of data is variable.

10. What are the different approaches to data mining problems?

i) Discovery of sequential patterns
ii) Discovery of patterns with in time series
iii) Discovery of classification rules
iv) Regression
v) Neural networks
vi) Genetic algorithms
vi) Clustering and segmentation

11. What is regression?

Regression is a similar approach to classification. If the classification rules is regarded as a function over the variables that maps these variables into a target class variable, the rule is called regression rule.

12. What is clustering?

Clustering is the data mining technique, that is directed towards goals of identification and classification. It identifies the finite set of categories or clusters to which each data object can be mapped.

13. What are the applications of data mining?

i) Marketing
ii) Finance
iii) Manufacturing
iv) Health care

14. Define Data Warehouse.

Data warehouse is a subject-oriented, integrated, non-volatile, time-variant collection of data in support of management's decisions. (OR) Data warehouse is a collection of decision support technologies, aimed at enabling the knowledge worker to make better and faster decisions.

(OR)

Data warehouse is a repository of information gathered from multiple sources, stored under a unified schema, at a single site.

15. What is the goal of data warehouse?

The goal of data warehouse is to provide access to data for complex analysis, knowledge discovery and decision-making. They also support OLAP, DSS and Data mining.

16. What are the Applications of Data warehousing?

i) OLAP (Online Analytical Processing)
ii) DSS (Decision Support System)/EIS (Executive Information Systems)
iii) Data Mining

17. Briefly explain about the Applications of Data warehousing.

OLAP- It has distributed computing capabilities, that require more storage and processing power and help in analysis of Complex Data.

DSS-They support Organization's decision makers with higher level data for complex and more important decisions.

Data mining- Used for Knowledge discovery, process of searching data for new knowledge.

18. What are the differences between relational databases and data warehouse?

i) Relational databases support insertions and updates, while Data warehouse support extraction, Processing, Analysis and decision-making.
ii) Relational database data may be distributed, while data warehouse is integrated data from multiple sources.

19. What is online transaction processing?

OLTP supports transactions in distributed environment. It supports insertions, updates, deletions and information query requirements.

20. What are the differences between transactional databases and data warehouse?

i)Transactional database provides access to disjoint and heterogeneous databases. Data warehouse store integrated data from sources in multidimensional model

ii)Transactional database support storage of historical data. Data warehouse support time-series and trend analysis with historical data.

iii)Transactional databases are volatile Data warehouses are non-volatile.

iv)Transactional database units are records. Data warehouse information is coarse grained, and subjected to incremental refreshing.

21. What are the distinctive characteristics of data warehouse?

i) Multidimensional conceptual view
ii) Generic Dimensionality
iii) Unlimited dimensions and aggregation levels.
iv) Unrestricted cross dimensional operations
v) Dynamic Sparse matrix handling
vi) Client-server architecture
vii) Multi-user support
viii) Accessibility
ix) Transparency
x) Intuitive data manipulation
xi) Consistent reporting performance
xii) Flexible reporting

22. What are the types of data warehouse?

i)Enterprise-wide data warehouse – For huge projects with large investment and resources
ii)Virtual data warehouse – Provide views of operational databases materialized for efficient access.
iii)Data mart – Data from any organization or department.

UNIT V

1. List the types of spatial queries?

Range query, nearest neighbour query, spatial joins or overlays.

2. List some types of multimedia data.

Text, graphics, animations, video, audio.

3. Name the two types of database accessible through web?

Access using CGI scripts, access using JDBC.

4. What is a Multimedia DBMS?
   A multimedia DBMS is a framework that manage different types of data potentially represented in a wide array of media sources.

5. What are the requirements of Multimedia DBMS?

Persistence
Privacy
Integrity control
Recovery
Query support.

6.How is multimedia data different?

Size
Capture Methods
Time constraint
Querying.

7. What are different data structures in MDBMS?

K-D trees
Quad trees
R-tree

8.Write the properties of k-d trees?

Each node represents a rectilinear region.
Each node associated with an axis.
Direction of cutting plane altername with depth.

9.What are the types of queries in MM-DBMS?

Whole Match queries
Sub-Pattern match queries
K-nearest Neighbour Queries
All pair queries or spatial joins.

10. What is active-DBMS?

An active database is a database in which some operations are automatically executed once a given situation arises.
The situation may correspond to the fact that
  -some specified events arise
  -Specific condition or state transtitions are detected.

11.How will you delete an active rule?

DROP TRIGGERNAME

12. What is spatial database?

Spatial database keep track of objects in a multi-dimensional space maps geographic information system(GIS) weather.In general spatial database are n-dimensional.

13.What is dedutive DB?

Dedutive databases is a declarative language to specify rules.Inference engine can deduce new facts by interpreting the rules related to logic programming.

14.Define facts?

It is similar to relation specification without the necessity of including attribute names.

15.Definr Rules.

It is simlilar to relational views(virtual relation that are not stored)

16.What is predicate?

Predicate has a name
                A fixed number of arguments.

17.Define knowledge database.

A knowledge base is aspecial kind of database for knowledge management providing the means for the computerized collection.organization and retrieval of knowledge.

16 Marks Questions

UNIT I

1. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examination conducted.

2. Explain first, Second Third Normal Forms and BCNF in detail.

3. How Transaction is managed in database. Explain with Database Architecture?

4. Expalin in detail about serial schedule and serial schedule in transaction processing?

5. Illustrate and discuss the steps involved in processing a query with neat diagram.

6. Discuss briefly on database tuning.

UNIT II

1. Explain about query processing algorithms in detail .

2. Explain about query optimization in detail .

3. Explain about concurrency control in detail.

4. Explain about Database Recovery Techniques in detail.

5. Explain about Distributed Databases

6. Explain about commit protocols.

7. Explain about inter operation and parallelism and intra operation parallelism.

UNIT III

1. Explain object oriented databases and its approaches.

2. Explain the component of ODMG model.

3. Discuss the transaction states in object oriented databases.

4. What is POSTGRES? Explain it in detail.

5. Discuss in detail about OQL concepts.

UNIT IV

1. How XML are processed and stored in web database? Explain in detail.

2. Explain the process of mobile database.

3. Explain in detail about data warehouse.

4. Explain about decision tree in the process of data mining.

UNIT V

1. Explain about deductive database.
2. Explain about Temporal database.
3. Explain about active database.
4. Explain the role and use of multimedia database.
5. Explain in detail about spatial database and multimedia query with complex types.