SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code :DBMS (15A05301) **Course & Branch**: B.Tech - CSE **Year & Sem:** II-B.Tech& I-Sem **Regulation:** R15

UNIT –I

Introduction to Database, Data Base design and Relational Model

1. (a) Define Database? Discuss about applications of Database Systems? 5M
   (b) Discuss about the purpose of Database Systems? 5M.
2. (a) What is Data Abstraction? Explain about different views of data? 5M
   (b) Define Instance and Schema? List different data models and explain? 5M
3. Explain about Database languages with examples? 10M
4. (a) Draw the Architecture of Database? 5M
   (b) Discuss about Database users and Administrators? 5M
5. (a) Draw ER diagram for Ternary Relationship set with suitable example? 5M
   (b) Discuss about key constraints for Ternary Relationships? 5M
6. Draw the ER diagram for a company needs to store information about employees (identified by ssn, with salary and phone as attributes), departments (identified by dno, with dname and budget as attributes), and children of employees (with name and age as attributes). Employees work in departments, each department is managed by an employee, a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company 5M
7. Explain about integrity constraints over relations? 10M
8. Write about logical database design (ER to Relational) with suitable examples? 10M
9. Discuss briefly about views? 10 M
10. (a) What is a weak entity? Explain with example? 2M
    (b) Explain about class hierarchy? 2M
    (c) Define Entity, Attributes, Entity set, relationship with appropriate notations? 2M
    (d) What is Relational Instance, Relational Schema? Give one examples ? 2M
    (e) draw the notation for multivalued attributes? Give one example? 2M

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UNIT –II

Relational Algebra And Calculus, Nested Queries

1. (a) Explain in detail about nested queries. 5M
   (b) Explain about aggregate operators. 5M
2. Write about relational algebra? Discuss about different operators used in algebra. 10M
3. (a) Differentiate the relational algebra and calculus. 5M
   (b) Explain in detail about expressive power of algebra and calculus. 5M
4. What are the variations in relational calculus? Explain with examples. 10M
5. What is a join ? Explain about conditional join and natural join with syntax and example. 10M
6. How to list and update row in a table? Explain with syntax and examples. 10M
7. What is meant by integrity constraint? Write about complex integrity constraints in sql 10M
8. How can we compare using null values? Explain about logical connectives with examples. 10M
9. (a) Discuss about outer joins with examples. 5M
   (b) Write about triggers and active databases. 5M
10. (a) Write query for finding the age of the youngest sailor who is eligible to vote for each rating level with at least two such sailors. 2M
    (b) When can we use group by clause, explain. 2M
    (c) Explain the structure of basic form of an SQL query. 2M
    (d) List and Explain set operators of relational algebra. 2M
    (e) Differentiate trigger with assertions. 2M

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Unit – III

Functional Dependencies AndNormalforms

1, (a) Differentiate BCNF with 3rd normal form. 7M
(b) Explain about denormalization. 3M
2. (a) Explain the following with suitable example: 5M
i) non-loss decomposition ii) prime attributes
(b) If R={ A,B,C,D,E } and FD's 5M
F={ A→ C, AC→ D, E→ AD, E→H} List all the candidate keys.
3. (a) What is redundancy? What are the problems caused by the redundancy? 5M
(b) Compute canonical cover Fc for the R={A,B,C,D} and FD's= { A→BC, B→C, A→B , AB→C, AC→D}. 5M
4. (a) Prove that a relation which is in 4NF must be in BCNF. 5M
(b) Define and explain 4NF with suitable example. 5M
5. (a) Define BCNF. How does BCNF differ from 3NF? Explain with example. 6M
(b) Explain 3NF. Give one example. 4M
6. (a) Explain about Full functional dependency and Partial dependency 5M
(b) If R= {A, B, C, G, H, I} and FD's are F= {A→B, B→HI, CG→H} Why R is not in 4NF? 5M
7. Define normalization. List and Explain different normal forms with examples. 10M
8. Explain about schema refinement in database design. 10M
9. (a) What is meant by multivalued dependency? Explain with example. 7M
(b) Write about problems related to decomposition. 3M
10. (a) What is meant by attribute closure? Explain. 2M
(b) Explain the classification of functional dependency. 2M
(c) List and Explain the properties of decomposition. 2M
(d) Prove that any relation schema with two attributes is BCNF. 2M
(e) Discuss about super key and candidate key in functional dependency with example. 2M

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Unit – IV

Transaction Management

1. Explain transaction management with relevant concept?	10 M.
2. Explain transaction states with example?	10M
3. Explain ACID properties of transaction management	10M
4.Define functional dependency and explain briefly?	10M
5. Explain briefly normal forms? With relevant example	10M
6. Explain serializability in transaction management	10M
7. Explain concurrency control with lock based protocols	10M
8. Explain classification of storage structure	10M
9. Explain buffer management in concurrency control system	10M
10.(a) Define transaction management.	2M
(b) Define functional dependency .	2M
(c) List and and define ACID properties	2M
(d) Define validation based protocols .	2M
(e) Explain lock based protocols .	2M

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UNIT –V

Overview of Storage and Indexing, Tree Structured Indexing, Hash Based Indexing

1.	(a) Discuss about file organizations and indexing?	5M
	(b) Explain about Index structures?	5M
2.	Compare file organizations?	10M
3.	(a) What is clustered index organization? Illustrate with example?	5M
	(b) Explain about Composite Search Keys? Illustrate with example?	5M
4.	(a) Illustrate Tree indexes ?	5M
	(b) Explain about ISAM?	5M
5.	Explain about B+ Trees Dynamic Indexing?	10M
6.	Explain about Search and Insert in Tree Structured Indexing?	10M
7.	Explain about Delete and Duplicated in Tree Structured Indexing ?	10M
8.	(a) Discuss about static hashing?	5M
	(b) Explain about Extendible hasing?	5M
9.	(a) Explain about linear hashing?	5M
	(b) Compare Extendible vsLinear hashing?	5M
10.	(a) Give one Example for Extendible hashing?	2M
	(b) Give one example for Linear hashing?	2M
	(c) Draw he structure of B+ tree?	2M
	(d) Design example for Clustered indexes?	2M
	(e) Design example for Composite Keys?	2M

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QUESTION BANK (OBJECTIVE)

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UNIT –I

Introduction to Database, Data Base design and Relational Model

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 following are components of a database except _____ [ ]

   A) user data B) metadata C) reports D) indexes

3. An application where only one user accesses the database at a given time is an example of a(n)___ [ ]

   A) single-user database application B) multiuser database application

   C) e-commerce database application D) data mining database application

4. SQL stands for _____ . [ ]

   A) Structured Query Language B) Sequential Query Language

   C) Structured Question Language D).Sequential Question Language

5. the following are functions of a DBMS except_____ [ ]

   A) creating and processing forms B) creating databases

   C)processing data D) administrating databases

6. An Enterprise Resource Planning application is an example of a(n) _____ [ ]

   A) single-user database application B) multiuser database application

   C) e-commerce database application D) data mining database application

7. The scheme for hierarchical database is [ ]

   A) a tree B) a graph C)a B-tree D) none of the all

8. One of the following is a valid record-based data model: [ ]

A) Object-oriented model B) Relational model C) Entity-relationship model D) None of these

9. SET concept is used in [ ]

A) Network model B) Hierarchical model C) Relational model D) None of the above

10. The level of data abstraction which describes how the data is actually stored is [ ]

A)conceptual level B) physical level C) file level D) logical level

11. A data model is : [ ]

A) Used to describe structure of a database B) Set of basic operations on the database

C) Both D)none of these

12. Which of following are the properties of entities ? [ ]

A) Groups B) Table C) Attributes D) Switchboards

13. Which of these is not a database object ? [ ]

A)index B) sequence C) cursor D) trigger

14. In a one-to-many relationship, the entity that is on the one side of the relationship is called a(n) _____ entity. [ ]

A)parent B).child C) instance D).subtype

15. A recursive relationship is a relationship between an entity and _____ . [ ]

A) itself B) a subtype entity C) an archetype entity D) an instance entity

16. In which of the following is a single-entity instance of one type related to many entity instances of another type? [ ]

A) One-to-One Relationship B) One-to-Many Relationship

C) Many-to-Many Relationship D) Composite Relationship

17. An attribute that names or identifies entity instances is a(n): [ ]

A) Entity. B) Attribute C) identifier D) relationship.

18. Entities can be associated with one another in which of the following? [ ]

A) Entities B) Attributes C) Identifiers D) Relationships

19. 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

20. The DBMS that is most difficult to use is _____ . [ ]

A) Microsoft's SQL Server B) Microsoft's Access

C).IBM's DB2 D).Oracle Corporation's Oracle

21. How many types of indexes are there in sql server? [ ]

A) 1 B) 2 C) 3 D) 4

22. Does index take space in the disk ? [ ]

A) It stores memory as and when required B) Yes, Indexes are stored on disk

C) Indexes are never stored on disk D) Indexes take no space

23. DDL Stands for _____. [ ]

A) Database Design Language B) Data Definition Language

C) Database Development Language D).None of these

24. Which of the following language is used to specify database Schema ? [ ]

A) Data Management Language B) Data Definition Language

C) Data Development Language D) Data Manupulation Language

25. Data Dictionary is also called as _____. [ ]

A) Symbol Table B) System Catalog C) Hash Table D)None of these

26. Storage structure and Access methods used by database are specified using [ ]

A) Data Storage and Definition Language B) Data Dictionary

C) Data Manipulation Language D) Data Manupulation Language

27. The ____ clause is actually used to do projection. [ ]

A)From B) IN C) NOT IN D).Select

28. ____ is used to starting cretin tasks automatically [ ]

A) Database B) Trigger C) View D).All

29. If both arguments are false, of course ,OR evaluated to ____ [ ]

A)False B) True C) None D).All

30. We use ____ when the column value is either unknown or inapplicable. [ ]

A)NULL B) Foreign Key C) NOT NULL D) None

31. We can disallow null values by specifying _____as part of the field definition [ ]

A) NOT NULL B) NULL C) IN D) NOT IN

32. 'AS' clause is used in SQL for _____ operation [ ]

A) Modify B) Alter C) Rename D) All

33. ODBC stands for Open Data Base Connectivity [ ]

A) Often Data Barrow Control B)Open Data Base Connectivity

C)Open Data Base Connection D) Open Data Base Copy

34. In the architecture of a database system external level is the ____ level [ ]

A) View B) Physical C) Logical D) All

35. An entity set that does not have sufficient attributes to form a primary key is a __ [ ]

A) Strong Entity Set B) Poor Entity Set C) Logical Entity Set D) Weak Entity Set

36. In an E-R diagram attributes are represented by ____ [ ]

A) Ellipse B) Rectangle C) Rhombus D) Line

37. A logical _____is the entire database. [ ]

A)Schema B) Language C) Relation D).None of these

38. _____ is a Collection of all possible value. [ ]

A)Range B) Tuple C) Domain D).Record

39. An ____ is represented by an oval [ ]

A)Tuple B) Domain C) Record D).Attribute

40. The first general purpose DBMS is designed by Charles bachman in 1960s [ ]

A)Charles bachman B) Gehrke C) Phillips D).None

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UNIT –II

Relational Algebra And Calculus, Nested Queries

1. Relational algebra is a _____type of query language. [ ]
   A) Non procedural B) Procedural
   C) Declarative D) Conceptual
2. In relational algebra which operator has the less priority [ ]
   A) cross-product B) difference
   C) division D) union
3. Which of the following is a fundamental operation in relational algebra [ ]
   A) Set intersection B) Natural join
   C) Assignment D) None
4. For select operation the _____ appear in the subscript and the _____ argument appears in the parenthesis after the sigma. [ ]
   A) Predicates, relation B) Relation, Predicates
   C) Operation, Predicates D) Relation, Operation
5. Which is a unary operation [ ]
   A) Selection operation B) Projection operation
   C) Primitive operation D) Generalized selection
6. In precedence of set operators the expression is evaluated from [ ]
   A) Left to left B) Left to right
   C) Right to left D) From user specification
7. The assignment operator is denoted by [ ]
   A) → B) ←

C) = D) ==

8. Given the relations *employee (name, salary, deptno)* and *department (deptno, deptname, address)*

Which of the following queries cannot be expressed using the basic relational algebra operations (U, -, x, π, σ, p)? [ ]

A) Department address of every employee

B) Employees whose name is the same as their department name

C) The sum of all employees' salaries

D) All employees of a given department

9. Given relations r(w, x) and s(y, z), the result of ***select distinct w, xfrom r, s*** is guaranteed to be same as r, provided [ ]

A) r has no duplicates and s is non-empty B) r and s have no duplicates

C) s has no duplicates and r is non-empty D) r and s have the same number of tuples

10. In SQL, relations can contain null values, and comparisons with null values are treated as nknown. Suppose all comparisons with a null value are treated as false. Which of thefollowing pairs is not equivalent? [ ]

A) x = 5, not (not (x = 5) B) x = 5, x > 4 and x < 6, where x is an integ

C) x< 5, not(x = 5) D) None of the above

11. _____ has similar power of expression as relational calculus and first order logic. [ ]

A) Arithmetic algebra B) Relational algebra

C) Both D) None

12. How many primitive operators of relation algebra as proposed by codd [ ]

A) 2 B) 3

C) 4 D) 6

13. In SQL which command can be put inside a program written in some other languages like C,C++

A) Interactive B) Embedded [ ]

C) Both D) None

14. Which of the following relational algebra operations do not require the participating tables to be union-compatible? [ ]

A) Union B) Intersection

C) Difference D) Join

15. Relational Algebra does not have []

A) Selection operator. B) Projection operator.

C) Aggregation operators. D) Division operator.

16. As per equivalence rules for query transformation, selection operation distributes over [ ]

A) Union. B) Intersection.

C) Set difference. D) All of the above.

17. In SQL the word 'natural' can be used with [ ]

A) inner join B) full outer join

C) right outer join D) all of the above

18. If two relations R and S are joined, then the non matching tuples of both R and S are ignored in

A) left outer join B) right outer join [ ]

C) full outer join D) inner join

19. Relational Algebra is [ ]

A) Data Definition Language B) Meta Language

C) Procedural query Language D) None of the above

20. Which of the following aggregate functions does not ignore nulls in its results?. [ ]

A) COUNT . B) COUNT (*)

C) MAX D) MIN

21. In SQL, testing whether a subquery is empty is done using [ ]

A) DISTINCT B) UNIQUE

C) NULL D) EXISTS

22. Database table by name Loan_Records is given below.

Borrower	Bank_Manager	Loan_Amount
Ramesh	Sunderajan	10000.00
Suresh	Ramgopal	5000.00
Mahesh	Sunderajan	7000.00

What is the output of the following SQL query? [ ]

```
SELECT Count(*)
  FROM  ( (SELECT Borrower, Bank_Manager
    FROM   Loan_Records) AS S
   NATURAL JOIN (SELECT Bank_Manager,
Loan_Amount
```

FROM Loan_Records) AS T);

A)3 B)9

C)5 D) 6

23. Let R and S be relational schemes such that R={a,b,c} and S={c}. Now consider the following queries on the database:

I. $\pi_{R-S}(r) - \pi_{R-S}(\pi_{R-S}(r) \times s - \pi_{R-S,S}(r))$

II. $\{t \mid t \in \pi_{R-S}(r) \wedge \forall u \in_r (\exists v \in s (u = v[s] \wedge t = v[R-S]))\}$

III. $\{t \mid t \in \pi_{R-S}(r) \wedge \forall v \in r (\exists u \in s (u = v[s] \wedge t = v[R-S]))\}$

IV) SELECT R.a, R.b FROM R,S WHERE R.c=S.c

Which of the above queries are equivalent? [ ]

A) I and II B) I and III

C) II and IV D) III and IV

24. The relation book (title, price) contains the titles and prices of different books. Assuming that no two books have the same price, what does the following SQL query list?

select title from book as B where (select count(*) from book as T where T.price>B.price) < 5

A) Titles of the four most expensive books [ ]

B) Title of the fifth most inexpensive book

C) Title of the fifth most expensive book

D) Titles of the five most expensive books

25. The event part in trigger structure includes [ ]

A) Insert B) Delete

C) Update D) None

26. Cartesian product in relational algebra is [ ]

A) a Unary operator. B) a Binary operator.

C) a Ternary operator. D) not defined.

27. An entity set that does not have sufficient attributes to form a primary key is a [ ]

A) strong entity set. B) weak entity set.

C) simple entity set. D) primary entity set.

28. Count function in SQL returns the number of [ ]

A) values. B) distinct values.

C) groups. D) columns.

29. _____ produces the relation that has attributes of R1 and R2 [ ]

A) Cartesian product B) Difference

C) Intersection D) Product

30. Which of the following operation is used if we are interested in only certain columns of a table?

A) PROJECTION B) SELECTION [ ]

C) UNION D) JOIN

31. Which of the following operations need the participating relations to be union compatible?

A) UNION B) INTERSECTION [ ]

C) DIFFERENCE D) All of the above

32. Which of the following is a comparison operator in SQL? [ ]

A) = B) LIKE

C) BETWEEN D) All of the above

33. Using Relational Algebra the query that finds customers, who have a balance of over 1000 is

A) Π Customer_name (σ balance >1000 (Deposit)) [ ]

B) σCustomer_name (Π balance >1000 (Deposit))

C) Π Customer_name (σ balance >1000 (Borrow))

D) σCustomer_name (Π balance >1000 (Borrow))

34. Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is: [ ]

A) mn B) m+n

C) (m+n)/2 D) 2(m+n)

35. The natural join is equal to : [ ]

A) Cartesian Product B) Combination of Union and Cartesian product

C) Combination of selection and Cartesian product

D) Combination of projection and Cartesian product

36. The _____ operator is used to compare a value to a list of literals values that have been specified.

A) BETWEEN B) ANY [ ]

C) IN D) ALL

37. A data manipulation command the combines the records from one or more tables is called

A) SELECT B) PROJECT [ ]

C) JOIN D) PRODUCT

38) Which of the following is true for relational calculus? [ ]

A) $\forall x(P(x)) \equiv \neg(\exists x)(\neg P(x))$ B) $\forall x(P(x)) \equiv \neg(\exists x)(P(x))$

C) $\forall x(P(x)) \equiv (\exists x)(\neg P(x))$ D) $\forall x(P(x)) \equiv (\exists x)(P(x))$

39) In tuple relational calculus P1 AND P2 is equivalent to [ ]

A) (¬P1OR ¬P2). B) ¬(P1OR ¬P2).

C) ¬(¬P1OR P2). D) ¬(¬P1OR ¬P2).

40) When $\varphi = \cap$ RS, then the cost of computing R∞S [ ]

A) the same as R × S B) greater the R × S

C) less than R × S D) cannot say anything

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Unit – III

Functional Dependencies AndNormalforms

1. Given the following relation instance.

x	y	z
1	4	2
1	5	3
1	6	3
3	2	2

Which of the following functional dependencies are satisfied by the instance? [ ]

A) XY →Z and Z →Y B) YZ →X and Y →Z

C) YZ →X and X → Z D) XZ →Y and Y → X

2. Consider a schema R(A, B, C, D) and functional dependencies A -> B and C -> D. Then the decomposition of R into R1 (A, B) and R2(C, D) is [ ]

A) dependency preserving and loss less join

B) loss less join but not dependency preserving

C) dependency preserving but not loss less join

D) not dependency preserving and not loss less join

3. Which normal form is considered adequate for normal relational database design? [ ]

A) 2NF B) 5NF

C) 4NF D) 3NF

4. Relation R with an associated set of functional dependencies, F, is decomposed into BCNF. The redundancy (arising out of functional dependencies) in the resulting set of relations is [ ]

A) Zero

B) More than zero but less than that of an equivalent 3NF decomposition

C) Proportional to the size of F+

D) Indeterminate

5. Which one of the following statements about normal forms is FALSE? [ ]

A) BCNF is stricter than 3NF

B) Lossless, dependency-preserving decomposition into 3NF is always possible

C) Lossless, dependency-preserving decomposition into BCNF is always possible

D) Any relation with two attributes is in BCNF

6. A table has fields F1, F2, F3, F4, and F5, with the following functional dependencies: [ ]

F1→F3, F2→F4, (F1,F2)→F5in terms of normalization, this table is in

A) 1NF B) 2NF

C) 3NF D) None of these

7. Which of the following is TRUE? [ ]

A) Every relation in 2NF is also in BCNF

B) A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R

C) Every relation in BCNF is also in 3NF

D) No relation can be in both BCNF and 3NF

8. Consider the following functional dependencies in a database.

Date_of_Birth→Age Age→Eligibility Name→Roll_number Roll_number→Name

Course_number→Course_name Course_number→Instructor

(Roll_number, Course_number)→Grade

The relation (Roll_number, Name, Date_of_birth, Age) is [ ]

A) in second normal form but not in third normal form

B) in third normal form but not in BCNF

C) in BCNF

D) in none of the above

9. The relation schema Student_Performance (name, courseNo, rollNo, grade) has the following FDs:

name,courseNo→grade rollNo,courseNo→grade

name→rollNo rollNo→name

The highest normal form of this relation scheme is [ ]

A) 2NF B) 3NF

C) BCNF D) 4NF

10. The relation EMPDT1 is defined with attributes empcode(unique), name, street, city, state, and pincode. For any pincode there is only one city and state. Also, for any given street, city and state, there is just one pincode. In normalization terms EMPDT1 is a relation in [ ]

A) 1NF only

B) 2NF and hence also in 1NF

C) 3NF and hence also in 2NF and 1NF

D) BCNF and hence also in 3NF, 2NF and 1NF

11. Which one of the following statements if FALSE? [ ]

A) Any relation with two attributes is in BCNF

B) A relation in which every key has only one attribute is in 2NF

C) A prime attribute can be transitively dependent on a key in a 3 NF relation.

D) A prime attribute can be transitively dependent on a key in a BCNF relation.

12. Consider the following relational schemes for a library database:

Book (Title, Author, Catalog_no, Publisher, Year, Price)

Collection (Title, Author, Catalog_no)

With the following functional dependencies:

I. Title Author ->Catalog_no

II. Catalog_no -> Title Author Publisher Year

III. Publisher Title Year -> Price

Assume {Author, Title} is the key for both schemes. Which of the following statements is true?

A) Both Book and Collection are in BCNF [ ]

B) Both Book and Collection are in 3NF only

C) Book is in 2NF and Collection is in 3NF

D) Both Book and Collection are in 2NF only

13. Let R(A,B,C,D,E,P,G) be a relational schema in which the following FDs are known to hold:

AB→CD DE→P C→E P→C B→G

The relation schema R is [ ]

A) in BCNF B) in 3NF, but not in BCNF

C) in 2NF, but not in 3NF D) not in 2NF

14. Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. F={CH→G, A→BC, B→CFH, E→A, F→EG} is a set of functional dependencies (FDs) so that F + is exactly the set of FDs that hold for R.

How many candidate keys does the relation R have? [ ]

A) 3 B) 4 C) 5 D) 6

15. Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. F={CH→G, A→BC, B→CFH, E→A, F→EG} is a set of functional dependencies (FDs) so that F + is exactly the set of FDs that hold for R. The relation R is [ ]

A) in 1NF, but not in 2NF. B) in 2NF, but not in 3NF.

C) in 3NF, but not in BCNF. D) in BCNF.

16. The normal form that is not necessarily dependency preserving is [ ]

A) 2NF B) 3NF

C) BCNF D) 4NF

17. A functional dependency of the form $_{X \rightarrow Y}$ is trivial if [ ]

A) $Y \leq X$ B) $Y < X$

C) $X \leq Y$ D) $X < Y$

18. The normalization was first proposed by _____. [ ]

A) Code B) Codd

C) Boyce Codd D) Boyce

19. Relations produced from an E-R model will always be [ ]

A) First normal form. B) Second normal form.

C) Third normal form. D) Fourth normal form

20. Which of the following is not a consequence of non-normalized database? [ ]

A) Update Anomaly B) Insertion Anomaly

C) Redundancy D) Lost update problem

21. Dependency preservation is not guaranteed in [ ]

A) BCNF B) 3NF

C) PJNF D) DKNF

22. Fifth Normal form is concerned with [ ]

A) Functional dependency. B) Multivalued dependency.

C) Join dependency. D) Domain-key.

23. In 2NF [ ]

A) No functional dependencies (FDs) exist.

B) No multivalued dependencies (MVDs) exist.

C) No partial FDs exist.

D) No partial MVDs exist.

24. The following functional dependencies hold for relations R(A, B, C) and S(B, D, E):

B → A, A → C

The relation R contains 200 tuples and the relation S contains 100 tuples. What is the maximum number of tuples possible in the natural join R S (R natural join S) [ ]

A) 100 B) 200

C) 300 D) 2000

25. A relation is in _____ if an attribute of a composite key is dependent on an attribute of other composite key. [ ]

A) 2NF B) 3NF

C) BCNF D) 1NF

26. Whenever two independent one-to-many relationships are mixed in the same relation, a _____ arises. [ ]

A) Functional dependency B) Multi-valued dependency

C) Transitive dependency D) Partial dependency

27. The following functional dependencies are given:

AB→CD, AF→D, DE→F, C→G , F→E, G→A

Which one of the following options is false? [ ]

A) CF+ = {ACDEFG} B) BG+ = {ABCDG}

C) AF+ = {ACDEFG} D) AB+ = {ABCDFG}

28. An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true? [ ]

A) A is a candidate key B) A is not a candidate key

C) A is a primary Key D) Both A and C

29. Data independence means [ ]

A) data is defined separately and not included in programs.

B) programs are not dependent on the physical attributes of data.

C) programs are not dependent on the logical attributes of data.

D) both B and C.

30. Functional dependency describes the relationship between_____ [ ]

A) Columns B) Tables

C) Tuples D) None

31. A functional dependency is a generalization of the notation of [ ]

A) Primary key B) Foreign key

C) Super key D) Unique key

32. Desirable properties of decomposition are [ ]

A) attribute and dependency preservation

B) lack of redundancy

C) lossless-join decomposition

D) all the above

33. Consider a relation R with five attributes ABCDE. The following dependencies are given A → B, BC → E, and ED → A. The keys for R are [ ]

A) CDE B) ACD

C) BCD D) all the above

34. Consider a relation R with five attributes ABCDE. The following dependencies are given A → B, BC → E, and ED → A. R is in [ ]

A) 2NF B) 3NF

C) BCNF D) 4NF

35. Which of the following is TRUE about formulae in Conjunctive Normal Form? [ ]

A) For any formula, there is a truth assignment for which at least half the clauses evaluate to true.

B) For any formula, there is a truth assignment for which all the clauses evaluate to true.

C) There is a formula such that for each truth assignment, at most one-fourth of the clauses evaluate to true.

D) None of the above.

36. Consider the following relational schemes for a library database:

Book(Title,Author,Catalog_no, Publisher, Year, Price)

Collection(Title,Author,Catalog_no)

with in the following functional dependencies:

I. Title Author→Catalog_no

II. Catalog_no→Title Author Pub lisher Year

III. Publisher →Title Year Price [ ]

Assume {Author, Title} is the key for both schemes. Which of the following statements is true?

A) Both Book and Collection are in BCNF

B) Both Book and Collection are in 3NF only

C) Book is in 2NF and Collection is in 3NF

D) Both Book and Collection are in 2NF only

37. Suppliers(sid:integer, sname:string, cit y:string, street:string)

Assume that, in the suppliers relation above, each supplier and each street within a city has a unique name, and (sname, city) forms a candidate key. No other functional dependencies are implied other than those implied by primary and candidate keys. Which one of the following is TRUE about the above schema? [ ]

A) The schema is in BCNF

B) The schema is in 3NF but not in BCNF

C) The schema is in 2NF but not in 3NF

D) The schema is not in 2NF

38. Consider a relation with schema R(A,B,C,D) with functional dependencies BC→A, AD→B, CD→B, AC→D. What are the candidate keys of R? [ ]

A) BC,CD,AC B) DA,AB,BD

C) AD,CD,BA D) AC,CD, BD

39. Attributes on the left hand side of the arrow of a functional dependency is referred to as [ ]

A) tuple B) dependent

C) determinant D) none

40. If A→B holds and C is a set of attributes then CA→CB holds, called as [ ]

A) Reflexivity rule B) Augmentation rule

C) Transitivity rule D) Union rule

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QUESTION BANK (OBJECTIVE)

Subject with Code :DBMS (15A05301) **Course & Branch**: B.Tech - CSE **Year & Sem:** II-B.Tech& I-Sem **Regulation:** R15

Unit – IV

Transaction Management

1. A transaction may not complete its execution successfully. Such a transaction is termed [ ]
A) Aborted B) Terminated C) Closed D) All of the mentioned.

2. If an transaction is performed in a database and committed, the changes are taken to the previous state of transaction by [ ]
A) Flashback B) Rollback C) Both a and b D) Cannot be done

3. Each modification done in database transaction are first recorded into the [ ]
A) Harddrive B) Log C) Disk D) Datamart

4. When the transaction finishes the final statement the transaction enters into [ ]
A) Active state B) Committed state C) Partially committed state D) Abort state

5. The name of the transaction file shall be provided by the operator and the file that contains the edited transactions ready for execution shall be called [ ]
A) Batch. Exe B) Trans. Exe C) Opt. Exe D) Edit.Exe

6. Which of the following is an atomic sequence of database actions? [ ]
A) Transaction B) Concurrency C) Relations D) All of the mentioned

7. If the state of the database no longer reflects a real state of the world that the database is supposed to capture, then such a state is called [ ]
A) Consistent state B) Parallel state C) Atomic state D) Inconsistent state

8. _____ means that data used during the execution of a transaction cannot be used by a second transaction until the first one is completed. [ ]
A) Serializability B) Atomicity C) Isolation D) Time stamping

9. DBMS periodically suspends all processing and synchronizes its files and journals through the use of

A) Checkpoint facility B) Backup facility C) Recovery manager D) Database change log

10. Which of the following is not a state in transaction ? [ ]

A) Active B) Terminated C) Aborted D) Partially committed

11. Consider money is transferred from (1)account-A to account-B and (2) account-B to account-A. Which of the following form a transaction ? [ ]

A) Only 1 B) Only 2 C) Both 1 and 2 individually D) Either 1 or 2

12. A transaction is delimited by statements (or function calls) of the form [ ]

A) Begin transaction and end transaction B) Start transaction and stop transaction

C) Get transaction and post transaction D) Read transaction and write transaction

13. Identify the characteristics of transactions [ ]

A) Atomicity B) Durability C) Isolation D) All of the mentioned

14. Which of the following has "all-or-none" property ? [ ]

A) Atomicity B) Durability C) Isolation D) All of the mentioned

15. The database system must take special actions to ensure that transactions operate properly without interference from concurrently executing database statements. This property is referred to as [ ]

A) Atomicity B) Durability C) Isolation D) All of the mentioned

16. The property of transaction that persists all the crashes is [ ]

A) Atomicity B) Durability C) Isolation D) All of the mentioned

17. _____ states that only valid data will be written to the database. [ ]

A) Consistency B) Atomicity C) Durability D) Isolation

18. Transaction processing is associated with everything below except [ ]

A) Producing detail summary or exception reports B) Recording a business activity

C) Confirming a action or triggering a response D) Maintaining a data

19. The Oracle RDBMS uses the ____ statement to declare a new transaction properties. [ ]

A) BEGIN B) SET TRANSACTION C) BEGIN TRANSACTION D) COMMIT

20. ____ means that the data used during the execution of a transaction cannot be used by a second transaction until the first one is completed. [ ]

A) Consistency B) Atomicity C) Durability D) Isolation

21. A transaction may not always complete its execution successfully. Such a transaction is termed [ ]

A) Aborted B) Terminated C) Closed D) All of the mentioned

22. If an transaction is performed in a database and committed, the changes are taken to the previous state of transaction by [ ]

A) Flashback B) Rollback C) Both a and b D) Cannot be done

23. Each modification done in database transaction are first recorded into the [ ]

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28. _____ means that data used during the execution of a transaction cannot be used by a second transaction until the first one is completed. [ ]

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29. DBMS periodically suspends all processing and synchronizes its files and journals through the use of [ ]

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30. Which of the following is not a state in transaction ? [ ]

A) Active B) Terminated C) Aborted D) Partially committed

31. In order to reduce the overhead in retrieving the records from the storage space [ ]

A) Logs B) Log buffer C) Medieval space D) Lower records

32. The order of log records in the stable storage _____ as the order in which they were written to the log buffer. [ ]

A) Must be exactly the same B) Can be different C) Is opposite D) Can be partially same

33. Before a block of data in main memory can be output to the database, all log records pertaining to data in that block must have been output to stable storage. This is [ ]

A) Read-write logging B) Read-ahead logging C) Write-ahead logging D) None of the mentioned

34. Writing the buffered log to _____ is sometimes referred to as a log force. [ ]

A) Memory B) Backup C) Redo memory D) Disk

35. The _____ policy, allows a transaction to commit even if it has modified some blocks that have not yet been written back to disk. [ ]

A) Force B) No-force C) Steal D) No-steal

36. _____ policy allows multiple updates to accumulate on a block before it is output to stable storage, which can reduce the number of output operations greatly for frequently updated blocks. [ ]

A) Force B) No-force C) Steal D) No-steal

37. the _____ policy, allows the system to write modified blocks to disk even if the transactions thatmade those modifications have not all committed. [ ]

A) Force B) No-force C) Steal D) No-steal

38. Locks on buffer blocks are unrelated to locks used for concurrency-control of transactions, and releasing them in a non-two-phase manner does not have any implications on transaction serializability. This is [ ]

A) Latches B) Swap Space C) Dirty Block D) None of the mentioned

39. The _____ contains a list of blocks that have been updated in the database buffer. [ ]

A) Latches B) Swap Space C) Dirty Block D) None of the mentioned

40. The operating system reserves space on disk for storing virtual-memory pages that are not currently in main memory; this space is called [ ]

A) Latches B) Swap Space C) Dirty Block D) None of the mentioned

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QUESTION BANK (OBJECTIVE)

Subject with Code :DBMS (15A05301) **Course & Branch**: B.Tech - CSE **Year & Sem:** II-B.Tech& I-Sem **Regulation:** R15

UNIT – V

Overview of Storage and Indexing, Tree Structured Indexing, Hash Based Indexing

1. ____ are sequential access devices and forces us to read data one page after the other [ ]
   A) Tapes B) Record C) Tuple D) Relation
2. Each record in a file as a unique identifier called a _____ [ ]
   A) Column id B) Row id C) Column name D) Record id
3. A ____ operation allows us to step through all the records in the file one at a time. [ ]
   A) Type B) Retrieve C) Scan D) Blue
4. The simplest file structure is an_____ or heap file [ ]
   A) Unordered file B) Hash File C) Tree file D) All
5. An ___ is a data structure that organises data records on disk to optimize certain kinds of retrieval operations. [ ]
   A) Filing B) Sorting C) Storing D) Index
6. We use the term _____to refer to the records stored in an index file. [ ]
   A) File entry B) Data store C) Data entry D) Index entry
7. A ___ organisation is a method of arranging the records in a file when the file is stored on disk [ ]
   A) File B) Record C) Tuple D) Index
8. A technique called ____can help when we have to access a collection of records in multiple ways. [ ]
   A) Storing B) Retrieve C) Indexing D) All
9. An index on a set of fields that includes the primary key is called a ____. [ ]
   A) Primary index. B) Foreign index C) Secondary Index D) All
10. Two data entries are said to be duplicate if they have the same value for the ___field

associated with the index [ ]

A) Storage key B) Search key C) Entry key D) Non Entry key

11. The records in a file are grouped in ____. [ ]

A) Files B) Relations C) Registers D) Buckets

12. A primary key is also called as_____. [ ]

A) Secondary key B) Foreign key C) Candidate key D) All

13. The lowest level of the tree called the _____contains the data entries. [ ]

A) Low level B) Top Last level C) Leaf level D) Parent node level

14. All searches begin at the top most node called the ____. [ ]

A) Child B) Leaf C) Child Leaf D) Root

15. Data is read into memory for processing and written to disk for persistent storage by a layer of software called the ____manager [ ]

A) Buffer B) Storage C) Memory D) None

16. The bucket to which a record belongs can be determined by applying a special function called a _____to search key. [ ]

A) Hash function B) Indexing C) Buffer key D) All

17. The ___is an index structure that ensures that all paths from the root to a leaf in given tree are of the same length [ ]

A) Tree B) B+ Tree C) Binary Tree D) Hash Tree

18. The average number of children for a non-leaf node is called ___of a tree [ ]

A) Fan out B) Fan in C) Fan all D) All

19. The choice of indexes has a tremendous impact on system _____and must be made in the context of the expected workload. [ ]

A) Storage B) Memory C) Heat D) Performance

20. The search key for an index can contain several fields such keys are called _____or concatenated keys. [ ]

A) Storage key B) Memory key C) Composite search keys D) None

21. If the search key is composite an _____is one in which field in the search key bound to a constant. [ ]

A) Equality query B) Non equality query C) Sql query D) All

22. With respect to a composite key _____not all fields in the search key are bound to

Constants [ ]

A) Index range query B) Hash range query C) Sql range query D) All

23. The average no.of _____ for a non-leaf node is called the fan-out of the tree. [ ]

A) Parents B) Children C) Roots D) All

24. In every non-leaf node had 'n' children, a tree of height 'h' has __ leaf pages. [ ]

A) hn B) nh C) h^n D) n^h

25. The pages in the file must be fetched from ___ into the ___ pool [ ]

A) Memory, Record B) Disk, Buffer C) Disk, Index D) Index, Buffer

26. The ____to which a record belongs can be determined by applying a special function called a hash function. [ ]

A) Bucket B) Index C) Buffer D) Register

27. An _____allows us efficiently retrieve all records that satisfy search conditions on the search key. [ ]

A) Hash Function B) Hash table C) Index D) All

28. The ___ of records is an important abstraction in a dbms [ ]

A) Bunch B) Tuples C) Hash records D) File

29. Each record in a file as unique ____ called a record id [ ]

A) Identities B) Records C) Hash Records D) None

30. The search key for an index can contain several fields such keys are called composite search keys or_____. [ ]

A) Composite keys B) Concatenated keys C) Foreign key D) None

31. On inserts the record is inserted into the appropriate ____ with overflow pages allocated necessary. [ ]

A) Buffer B) Memory C) Buckets D) All

32. In magnetic disk _____ stores information on a sector magnetically as reversals of the direction of magnetization of the magnetic material. [ ]

A) Read–write head B) Read-assemble head C) Head–disk assemblies D) Disk arm

33. A ___is the smallest unit of information that can be read from or written to the disk. [ ]

A) Track B) Spindle C) Sector D) Platter

34. Which level of RAID refers to disk mirroring with block striping? [ ]

A) RAID level 1 B) RAID level 2 C) RAID level 0 D) RAID level 3

35. A unit of storage that can store one or more records in a hash file organization is denoted as
A) Buckets B) Disk pages C) Blocks D) Nodes [ ]

36. A top-to-bottom relationship among the items in a database is established by a __ [ ]
A) Hierarchical schema B) Network schema C) Relational schema D) All of the mentioned

37. The highest level in the hierarchy of data organization is called ___ [ ]
A) Data bank B) Data base C) Data file D) Data record

38. In ordered indices the file containing the records is sequentially ordered, a _____ is an index whose search key also defines the sequential order of the file. [ ]
A) Clustered index B) Structured index C) Unstructured index D) Nonclustered index

39. Indices whose search key specifies an order different from the sequential order of the file are called _____ indices. [ ]
A) Nonclustered B) Secondary C) All of the mentioned D) None of the mentioned

40. Incase the indices values are larger, index is created for these values of index. This is called [ ]
A) Pointed index B) Sequential index C) Multi level index D) Multiple index

41. A search key containing more than one attribute is referred to as a ____search key. [ ]
A) Simple B) Composite C) Compound D) Secondary

42. What is the purpose of index in sql server [ ]
A) To enhance the query performance B) To provide an index to a record
C) To perform fast searches D) All of the mentioned

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