

TOPIC NAME:: DATA BASE MANAGEMENT SYSTEM

1). Which Structure is the hierarchical model based on?

- a. tree b. none of these c. Linked list d. graph **ANSWER: A**

2). In the relational model the number of attributes number of tuples in a relation is termed as _____ and _____ respectively.

- a. cardinality, degree. b. cardinality, domain c. domain, degree d. degree, cardinality **ANSWER: D**

3).In domain relational calculus we create a variable For every

- a. none these b. table c. row d. Column **ANSWER: D**

4).Why do we have to create a primary index on a primary key

- a. ease of searching b. sequential ordering of a file c. both (A)&(B) d. none these **ANSWER:C**

5).In context with relational algebra, which of the following are unary operations

- 1). SELECT 2). PROJECT 3).UNION 4).PRODUCT

- a. 2 and 4 only b. 1and 4 only c. 1 and 3 only d. All are binary operations **ANSWER: B**

6).Let R is a relation schema ,R(A,B,C,D) and F={ A->B,B- >C,C->A }is the set of functional dependency. How many candidate keys are there?

- a. 1 b. 2 c. 3 d. none of these **ANSWER: C**

7). Consider the following SQL query WITH max balance(value)AS SELECT MAX(balance) FROM account; The result of executing the above query is

- a. A temporary table is created with the name max_balance
b. A temporary view is created with the name max_balance
c. A permanent view is created with the name max_balance
d. None of the above

ANSWER: B

8).match list-I with list-II and select the correct answer using the codes given below the lists:

- | List-I | list-II |
|----------------------------|----------|
| A. primary index | 1. Dense |
| B. clustered index | 2.sparse |
| C.secondary key index | |
| D. secondary non-key index | |

Codes: ABCD

- a. 1 1 2 1 b. 2 1 1 2 c. 2 2 1 1 d. 1 2 2 1 **ANSWER: C**

9). Consider the following statements:

- S₁ :Foreign key allows null values S₂: Every binary table is in BCNF.

Which of the following is true?

- a. none of this b. S₂ is true. c. Both S₁ and S₂ are true d. s₁ is true **ANSWER: C**

10). Consider the SQL query

SELECT ename FROM emp GROUP BY deptno;

What is the output of the query?

- a. Syntax error b. All employee name are displayed
c. None of these. d. All employee names department wise are displayed **ANSWER: A**

11). A correlated sub query always executes in

- a. Top- Bottom- Top b. None of these. c. Top- Bottom d. Bottom- Top **ANSWER: A**

12). Consider the query: SELECT dept*, emp*FROM emp,dept;

Which one of the following reflects the output of these above query?

- a. All the dept tables columns are followed by the emp table columns
b. both tables are displayed as mixture c. none of these
d. All the emp tables columns are followed by the dept table columns **ANSWER: A**

13). Consider the relational R(A,B,C,D) and the set F=(AB->CD,C->A), the number of candidate keys are

- a. 1 b. 3 c. 4 d. 2 **ANSWER: D**

14). . In a relation there are 4 records as shown below [d]

Teacher	Course	Text	Division
Smith	Data Structure	Bar Fram	I
Smith	Data Management	A1 – Nour	IV
Hall	Compiler	Haffman	III
Brown	Data Structure	Augenthaler	II

There is an index file associated with this and it contains 1,4,3,2 value.

Form which field is the index built:

- a. division b. course c. Teacher d. text **ANSWER: A**

15). Consider the relation R(A, B, C, D) and the set. $F = \{ AB \twoheadrightarrow CE, E \rightarrow AB, C \rightarrow D \}$

What is the highest normal form of this relation?

- A). 1 NF B). 2NF C). 3NF D). BCNF **ANSWER: B**

16). Given the relation R(X, Y, W, Z, P, Q) AND THE SET F= {XY->W, XW->P, PQ->Z, XY->Q}

Consider the decomposition R₁(Z, P, Q) and R₂ (X, Y, W, P, Q). This decomposition is

- a. either losses or lossy b. neither lossless or lossy c. lossless decomposition d. lossy decomposition **ANSWER: C**

17). SELECT COUNT (*) FROM emp HAVING COUNT (*)>2; This query when executed given

- a. none of these b. error c. cannot say d. Some output **ANSWER: B**

18). what is the highest normal form of the relation R(W,X,Y,Z) with the set F=(WY->XZ,X->Y)?

- a. 3NF b. BCNF c. 1NF d. 2NF **ANSWER: A**

19). An empty table is given, consider the following query: SELECT COUNT (Commission) FROM emp;

What will be the output of this query?

- a. Null b. Error c. 1 d. 0 **ANSWER: D**

20). Consider the SCHEDULE show below. What is the highest normal form of this relation?

SCHEDULE (student_ID, class_No, student_Name, student_Major, class_Time, Building_Room, Instructor).

assume the following functional dependencies

{ Student_ID->Student_Name, Student_ID->Student_major, Class_No->Classs_time, Class_No->Buliding Room, Class_No->instructor}

a. 1NF b. 2NF c. BCNF d. 3NF **ANSWER: A**

21). The five aggregation operations in SQL are

a. SUM, AVG, MIN, MAX, COUNT b. SUM.AVG, MIN, MAX, DISTINICT
c. SUM, AVG, IN, DISITINCT, COUNT d. SUM,AVG,IN,ALL,ANY **ANSWER: A**

22). what are the prime attributes of the relation R(A,B,C,D) and the set F={AB->C, C->D, D->A}

a. A,C and d b. B,C and D c. A,B and c d. A,B and D **ANSWER: D**

23). Given the relation R (A, B, C, D) and the set F= {AB->C, B->D, D->B}.

find the candidates keys of the relation

a. AC and BD b. AB and AD c. AB and CD d. BC and AD **ANSWER: B**

24). Consider the following queries

S₁ : SELECT e.name FROM emp e WHERE e.sal=ANY (SELECT sal FROM emp WHERE e.name='X') ;

S₂: SELECT e.name FROM emp e WHERE e.sal IN (SELECT sal FROM emp WHERE e.name='X');

S₃: SELECT e.name FROM emp e WHERE e.sal = ALL (SELECT sal FROM emp WHERE e.name='X');

Which one of the following is true?

a. none of these b. S₁ S₂ are same c. S₂ , S₃ are same d. S₁ , S₂ , S₃ are same **ANSWER: B**

25). what are the prime attributes of relation R(A,B,C,D,E) and the set F={A->CD,C->B,B->AE}

a. B, C b. A, C c. A, D d. A, B **ANSWER: D**

26). Given relations R(w,x) and S(y,z) the result of SELECT DISTINCT w,x FROM R,S;

a. R and S have the same number of tuples b. R and S have no duplicates
c. S has no duplicates and R is non empty d. R has no duplicates and S is non empty **ANSWER: D**

27). Consider the following relation schema

R= { Acc_no, Branch, City, Depositor) with relation instance

Acc-no	Branch	City	Depositor
A-101	Downtown	Topeka	Jones
A-101	Downtown	Topeka	Smith
A-102	Uptown	Topeka	Jones

Assume that the following functional dependencies hold:

{ Acc_no → Branch, city

Branch → City}

What is the candidate key ?

- a). {Branch, city} b). { Acc_No, Branch} c). {Acc_no, City} d). {Acc_no, Depositor} **ANSWER: D**

28). Consider the relation R (a, b, c, d) and the set $F = \{ a \rightarrow c, b \rightarrow d \}$. The relation is in

- a). 1NF but not in 2 NF b). 2NF but not in 3 NF c). 3NF d). None of these **ANSWER: A**

29). Generally speaking, for a weak entity set to be meaningful it must be part of a

- a. One-to-many relationship b. many-to-many relationship
c. One-to-one relationship d. none of these **ANSWER: A**

30). A relation R is defined as R(S#, STATUS, CITY, SNAME) where S# is primary key.

If R decomposed into two relations R₁ and R₂.

which of the following is a loss less decomposition?

- a. R₁(S#, STATUS), R₂(S#, CITY, SNAME) b. R₁(S#, STATUS), R₂(STATUS, CITY, SNAME)
c. R₁(S#, STATUS, SNAME), R₂(S#, CITY, STATUS) d. R₁(S#, STATUS, CITY), R₂(S#, CITY, SNAME) **ANSWER: A**

31). Which language is used to define the integrity constraints?

- a. None of these b. DCL c. DML d. DDL **ANSWER: D**

32). A table T1 in a relation database has the following rows and column:

Roll no	Marks
1	10
2	20
3	30
4	Null

The following sequence of SQL statement was successfully executed on the table T1.

UPDATE T1 SET marks=marks + 5;

SELECT AVG(marks) FROM T1.

what is the output of the SELECT statement?

- a. NULL b. 18.75 c. 25 d. 20 **ANSWER: C**

33). Which of the following is a false statement?

- a. A schedule S is recoverable if no transaction T in S commits until all transaction 'T' which writes an item that reads, have committed
b. None of these c. wait-die protocol prevents dead lock and starvation.
d. Multiple granularity protocol is a variation of 2 phase locking protocol. **ANSWER: B**

34). null values in SQL indicates

1. Zero value 2. value is unknown 3. value does not exist
a. all, 1, 2, 3 b. only 3 c. only 2, 3 d. only 1, 2 **ANSWER: C**

35). The schema of a relation is an example of

- a. metadata b. entity c. data dictionary d. relationship **ANSWER: A**

36). In SQL, LIKE 'Made\%Easy%' MATCHES

- a. All strings beginning "Made\%Easy" b. Gives error
 c. All strings beginning with "Made Easy" d. All strings beginning with "Made %Easy" **ANSWER: D**

37). The goal concurrency control in database system is to

- a. Allow only those concurrent executions of transaction that are equivalent to some serial exactions of these transactions
 b. Execute transactions serially
 c. Allow only these transaction to execution concurrently that do not access any common relation
 d. Lock and unlock relation **ANSWER: A**

38). in an E-R diagram, the entity set Employee has name, age and address as attributes is a multivalued composites attributes composed of street number, city and pin code. When mapped to a relational model, the relations are

Select one:

- a. Employee (name, age), Address (name, street, number, city, pin code)
 b. Employee (name, age, address[n])
 c. Employee (name, age, street, number,[n],city[n],pin code[n])
 d. Employee(name, age, street, number[n],city[n],pin code[n])

The correct answer is: Employee (name, age), Address (name, street, number, city, pin code)

39). suppose that we decompose the schema $R(A,B,C,D)$ into $R_1(A,B,C)$ and $R_2(A,D,E)$ if the set F are functional dependencies holds on R . $F=\{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$, the decomposition is a

- a. may or may not be lossless decomposition b. none of these
 c. lossless decomposition is a d. lossy decomposition **ANSWER: C**

40). Which of the following SQL keyword is used with DCL statements?

- a. Alter b. Check c. Create d. Grant **ANSWER: D**

41). SQL IS A _____ LANGUAGE

- a. none of these b. Procedural c. non_Procedural d. cannot say **ANSWER: C**

42). Find the highest normal form of the relational $R(A,B,C,D)$ and the set $F=\{AB \rightarrow D, AC \rightarrow BD, B \rightarrow C\}$

- a. 2NF b. BCNF c. 3NF d. 1NF **ANSWER: C**

43). Which statement is true about DELETE and DROP?

- a. DELETE allows deletion of tuples, if a user deletes all tuples of relation the relation still exists, but it is empty .But if a relation is DROP, then it no longer exists.
 b. DELETE allows deletion of any number of tuples of relation the relation still exists, but it is not empty .But if a relation is DROP, then it exist and may not be empty
 c. DELETE allows deletion of any number of tuples of relation the relation still exists, but it is not empty .But if a relation is DROP, then it exist and may be empty
 d. Either (a) or (c) **ANSWER: A**

44). making a change to the conceptual scheme of a database but not affecting the existing external schemas is an example of:

a. logical data independence b. concurrency control c. integrity control d. physical data independence **ANSWER:A**

45). A relational which is in 3NF may still have undesirable data redundancy because there may exist Select one:

a. Trivial functional dependency b. none of these **ANSWER: D**

c. Transaction functional dependency d. Non trivial functional dependencies involving prime attributes only

46). Which of the following is true?

a. Theta join, equi, join, natural join are all called inner joins b. Equi join is called inner join

c. Theta join is also called inner join d. Natural join is inner join **ANSWER: A**

47). What is data integrity?

a. The inability to view a data base because of system problems

b. Maintaining consistency of the data in a database

c. None of these d. Data being unavailable because it is being used by another user **ANSWER : B**

48). Consider the following set of functional dependencies(FDs)

{Emp_no->Ename, Bdate, Address,Dept_no}

{Dept_no->Dname, Mgr->No}

The additional FD(s) which cannot be inferred from the above set of FDs is **ANSWER: C**

a. {Ename, Dept->Mgr_No} b. {Emp_No->Dname} c. {Ename->Dept_No} d. {Emp->No, Dname, Mgr_no}

49). A relation (for the relational database model) consists of a set of tuples, which implies that

a. For any tuples, the values associated with all of their attributes may be the same

b. Relational model supports multi-valued attributes whose values can be represented in sets.

c. All tuples in a particular relational may have different attributes

d. All tuples in a relation must be distinct. **ANSWER:B**

50). If K is a foreign key in relation R then

a. K is primary key for R1 b. K cannot have a null value for tuples in R1

c. K is a key for some other relational d. Every tuple of R1 has a distinct value for k 1 **ANSWER: C**

51). Which of the following concept is applicable with respect to 2NF?

a. Partial dependency b. Transitive dependency

c. Full functional dependency d. Non-transitive dependency **ANSWER: C**

52). Which of the following operations is not apart of the basic set operations in relational algebra? Select one:

a. Difference b. Cartesian product c. union d. division **ANSWER: D**

53). Every determinant should be a candidate key is the definition for

a. 3NF b. BCNF c. 2NF d. 1NF **ANSWER: B**

54). Consider the relation R(X, Y, Z, W) and the set F={Y<->W,XY->Z}

where the symbol <-> means Y->W and W->Y simultaneously .

What is the candidate key of this relation?

- a. XY and ZW b. XY and WX c. XY and YZ d. XW and YZ

ANSWER: B

55). '___%' matches any string of

- a. Exactly three characters b. At most three characters
c. at most three characters d. At least three characters

ANSWER: D

TOPIC: DATABASE MANAGEMENT SYSTEM

1). consider relation schema R(A,B,C,D,E) with functional dependencies F containing A->B and C->D. T the schema is decomposed into R₁ (A,B) AND R₂ (A,C,D,E). Find which relation is not in BCNF.

- a. R₁ is not in BCNF b. None of these.
c. R₂ is not in BCNF d. R₁ is not in BCNF but R₂ is in BCNF

ANSWER: C

2). Let R (ABCDEFGH) be a relation with the following functional dependencies

FD={AB>CDEF

A->C

B->D

C->FG

G->H

H->F

G->F}, find the maximum normal form applicable to R

- a. 2NF b. BCNF c. 1NF d. 3NF

ANSWER: C

3). Let R is a schema, R (Sid, Cid, Sname, Cname, marks) and functional dependency

F={Sid->Sname, Cid->Cname, (Sid,Cid)->marks}, The highest normal form satisfied by above relation R is

- a. 1NF b. BCNF c. 3NF d. 2NF

ANSWER: A

4). Consider the schedule given below. T1 and T2 are two transaction and x and y are two resources.

T1	T2
Read_lock(y); Read_Item(y); Write – lock(x);	Read_lock(x); Read_item(y); Write-lock(y);

The schedule indicates

a). Serializable schedule b). Non- schedule c). A dead lock schedule d). None of the above **ANSWER: C**

5). Consider a database with four tables.

employee_(Fname,Lname,SSN,DNO),Department_(Dname,Dnumber),works_no(ESSN,PNO)and project(CPname, Pnumber, Dnum), then write a query to retrieve a list of employees and the projects they are working on, ordered by department and within each department, ordered alphabetically by last name,frist name.

a. SELECT Dname, Lname, Fname, Pname FROM Department, Employee, Works_no, Project WHERE PNO=Pnumber and Dnumber=DNO ORDER BY Dname, Lname

b. None of these

c. SELECT Dname, Lname, Fname, Pname FROM Department, Employee, Works_no, Project WHERE Dnumber = DNO and SSN=ESSN GROUP BY pnumber

d. SELECT Dname,Lname,Fname,Pname FROM Department,Employee,Works_no,Project WHERE Dnumber = DNO and SSN=ESSN and PNO=Pnumber ORDER BY D name ,Lname,Fname **ANSWER: C**

6). Assertion (A): second level index in multilevel indexing will be always a primary index.

Reason (R) : all indexed files will be always physics ordered file.

Which one of the following is true?

a. Both (A) and (R) are false

b. Both (A) and (R) are true and (R) is the reason for (A)

c. Both (A) and (R) are true but (R) is not correct reason for (A) d. (A) is true but (R) is false **ANSWER: A**

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 BCNF b. in 3NF but not in BCNF c. none of these d. In 2NF but not in 3NF **ANSWER:B**

9). The relation schema

Student_ performance (name, courseNO, rollNO, grade)

has the following functional dependencies

name, courseNO->grade

roll No, course->grade

name->roll No

roll NO-> name

the highest normal form of this relation is

a. 3NF b. 4NF c. 1NF d. BCNF **ANSWER::A**

10). which of the following scenarios may lead to an irrecoverable error in a database system?

Select one:

- a. a transaction read a data item after it is read by an committed transaction
- b. a transaction read a data item after it is written by an committed transaction
- c. a transaction read a data item after it is written by an uncommitted transaction
- d. a transaction writes a data item after it is read by an uncommitted transaction

ANSWER: C

11). consider the following instance

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

Which one of the following correctly describes the functional dependency hold by above instance. Select one:

- a. $YZ \rightarrow X, Y \rightarrow Z$ and $Y \rightarrow X$
- b. $YZ \rightarrow X$ and $X \rightarrow Z$
- c. $XY \rightarrow Y$ and $X \rightarrow Z$
- d. $XY \rightarrow Z$ and $Z \rightarrow Y$

ANSWER::A

12). S_1 : select b.cname FROM deposit d, borrow b WHERE d.bal>10,000 and b.amt <5000 and d.cname = b. cname

S_2 : Cname who are having an account with balance>10,000 and a loan with amount<5000

S_3 :{ t | $\exists s \in \text{deposit} (S[\text{bal}] > 10,000) \cap \exists u \in \text{borrow} (u[\text{amt}] < 5000 \cap s[\text{cname}] = u[\text{cname}]$

$\cap t [\text{cname}] = u[\text{cname}])$ }

- a). S_1, S_2 are same
- b). S_2, S_3 are same
- c). S_1, S_2, S_3 are same
- d). S_1, S_3 are same

ANSWER :: C

13). consider the following set dependencies F on the schema (A,B,C) $F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$ The canonical cover of this set is

- a. $A \rightarrow B$ and $B \rightarrow C$
- b. $A \rightarrow BC$ and $AB \rightarrow C$
- c. $A \rightarrow BC$ and $B \rightarrow C$
- d. $A \rightarrow BC$ and $A \rightarrow B$

ANSWER::B

14). $f = \{A \rightarrow BC, B \rightarrow A, C \rightarrow A\}$, $g = \{A \rightarrow B, B \rightarrow C, C \rightarrow A\}$

- a. g covers f
- b. f and g are equivalent
- c. f covers g
- d. none of these

ANSWER:: D

Common data questions 15 and 16

Q : SELECT max (sal) FROM emp GROUP BY dept no HAVING dept no <> 10;

Q SELECT max (sal) FROM emp WHERE dept no <> 10 GROUP BY dept no;

15). Which query will give maximum salary of each department except department number 10 from employee table?

- a). Only Q1
- b). Only Q2
- c). Both Q1 and Q2
- d). None of these

ANSWER::C

16). which of the following is false about above

ANSWER:::B

- a. None of these
- b. Q_1 is faster than Q_2
- c. Q_2 is faster than Q_1
- d. both queries can be used for the required result

17). Consider the following statement:

S_1 : every functional dependency is either a trivial dependency or must be a super key. Then the relation is in BCNF

S2 : All transitive dependencies can be removed in 3NF. Which of the following is true?

- a. no one of these b. S1 and S2 are true c. S1 is true d. S2 is true **ANSWER:::B**

18). Consider the following statement:

S1: select Cnames who is having an account balance > 10,000 but not having any loan

S2: SELECT Cname FROM account WHERE bal > 10,000 and Cname NOT IN (SELECT Cname FROM borrow);

Which of the following is true?

- a. Both S_1 , S_2 are same b. none of these c. S_1 , S_2 are not same d. cannot say **ANSWER:::A**

19). The SQL expression:

```
SELECT distinct T. branch-name FROM branch T, branch S
WHERE T.assets > s.assets and S.branch-city="PONDICHERRY"
```

find the name of

- a. the branch that has the greatest asset in PONDICHERRY
b. Any branches that has greater assets than any branch located in PONDICHERRY
c. All branches that have greater assets than any branch located in PONDICHERRY
d. All branches that have greater assets than all branch located in PONDICHERRY **ANSWER:::C**

20). Consider the following relation schema pertaining to supplier_part database

$S(S\#, SNAME)$, $P(P\#, COLOR)$ and SP denotes the product of S and P What does the following SQL query produces?

```
SELECT DISTINCTS .NAME FROMS WHERE S . S# IN(SELECT SP.S# FROM SP WHERE SP. P# IN(SELECT P.P# FROM WHERE
P.COLOR ='RED'))).
```

- a. Get supplier name for suppliers who supply at least one red part
b. None of these
c. Get suppliers names for suppliers who supply only RED parts
d. Get supplier name for suppliers who do not supply red parts **ANSWER::: A**

21). Consider two tables in a relational database with columns and rows as follows:

Roll_no	Name	Dept_id
1	ABC	1
2	DEF	2
3	GHI	3
4	JKL	4

TABLE: STUDENT

TABLE: DEPARTMENT

Dept_id	Dept_name
1	A
2	B

- > a.

A
a3
a2
- > b.

A
a1
a3
a2
a3
- > c.

A
a1
a3
a2
- > d.

A
a1
a3
a2
a1

ANSWER:::C

25). A compound key

- a. both (a) and (b) above
 - b. is made up of a several pieces of information
 - c. is a combination of each unique key
 - d. unique identifies an item in a list
- ANSWER ::A**

26). The database administration is, in effect, the coordinator between the ___ and the ___

- a. data base, users
 - b. application program , users
 - c. DBMS,data based. application program,data base
- ANSWER:A**

27).a race condition occurs when

- a. none of these
 - b. two uses typing to obtain write lock on same data item
 - c. two user of the DBMS are interacting with different files at the same time
 - d. two concurrent activities interact to cause a processing error
- ANSWER::D**

The correct answer is: two concurrent activities interact to cause a processing error

28).the output of the query is

A company has a storeroom, which consists of few employees who order products from different shops. Following is the snapshot of the " product-order" table maintained at company's database.

Product-order

Product-no	Employee-no	Shop-no
P1	E6	S2
P2	E2	S1
P3	E7	S4
P4	E5	S3
P5	E2	S3
P6	E7	S2

CONSIDER THE FOLLOWING QUERY:

SELECT A. product_no, A.employee_no FROM product_order A, product_order B WHERE A.employee_no=B.employee_no And A.shop_no<>B.shop_no;

- a. Retrieve the product number, employee number who haven't ordered products from any shop

- b. Retrieve the product number, employee number where an employee has ordered products from more than one shop
- c. Retrieve the product number, employee number where the employee has ordered products from exactly than one shop
- d. Retrieve the product number, employee number where the employee has ordered from the shop which has not given product to any other employees

ANSWER:: B

29).. Consider the schema R=(A,B,C,D,E,F) together with the functional dependencies:

A->B DE->F B->C

The highest normal form of the above relation is

a. 3NF

b. 2NF

c. 1NF

d. BCNF

ANSWER::C

Common data for next 2 questions

There are six tables describes a company , describing employees,departments,buildings , which department(s) an employee works in (and a percentage of the time for each), department manger (possibly more than one per department) , and in which building an employee works(an employee may have more than one office). The primary key of each table is the attribute(s) in capitals. Other attributes are not necessarily unique.

EMP (EID, EName, Salary, Start_date, En d_date)

IN_DEPT (EID, DID, Percent_time)

BUILDING (BID, Bname, Address)

IN_BULIDING (EID, BID)

DEPT (DID, Dname, Annual_Budget)

MANAGES_DEPE (EID, DID)

30).WHICH of the following queries finds the name of department where no employees work?

a. Both (b) and (c)

b. SELECT Dname

FROM DEPT, IN_DEPT

WHERE IN_DEPT.DID=DEPT.DID GROUP

BY DID

HAVING COUNT (EID)=0

c. SELECT Dname

FROM DEPT

WHERE DID IN (SELECT I.DID FROM

IN_DEPT I

GROUP BY I DID HAVING COUNT (*)=0)

d.)SELECT Dname

FROM DEPT D, IN_DEPT I, EMP E

WHERE I.EID =E.EID and

D.DID = D.DID and Count (E.EID)=0

ANSWER::B

31). Which one of the following queries finds the name of building where more than 50 employees work?

1. SELECT bname FROM IN_BULLIDING GROUP _BY BID WHERE Count (*)>50

2. SELECT Bname FROM BUILDING WHERE BID IN (SELECT BID FROM) IN_BUILDING
GROUP BY BID HAVING COUNT.BID (*)>50

3. SELECT Bname FROM BUILDING B, IN BUILDING I WHERE B.BID = I.BID GROYP BY B.BID
HAVING COUNT (*)>50

4) SELECT Bname FROM BUILDING B WHERE 50< (Select count (*) from IN_BUILDING | Where I. BID = B. BID

a. 1 and 3 b. 3 and 4 c. 2 and 4 d. 1 and 2 **ANSWER : C**

Common data for next 2 questions

Consider a database table T with attributes A,B,C,D,E and a set of functional dependencies

FD={AE->BC,AC->D,CD->BE,D->E}

32). what is the highest normal form of the table T?

a. BCNF b. 3NF c. 2NF d. 1NF **ANSWER:: D**

33). which of the following are the candidate key of T?

a. AE,BA,D b. AE,AC,CD c. D,E d. AE,AC,AD **ANSWER:D**

33). If we decompose S into $S_1 = ABD$ and $S_2 = BC$, then fill in the following blanks for A,B and C

Consider the relation schema $S(A,B,C,D)$ and the following functional dependencies on

$S\{A \rightarrow BCD, B \rightarrow C, CD \rightarrow A\}$

1. The decomposition is ____

2. The decomposition is ____

3. Valid decomposition into ____

a. Lossy, not dependency preserving, 3NF b. Lossless, dependency preserving, BCNF
c. Lossy, dependency preserving, BCNF d. Lossless, not dependency preserving, BCNF **ANSWER:::D**

34). If we decompose S into $S_1 = ABC$ and $S_2 = bcd$, then which of the following observation become true? Consider the relation schema $S(A,B,C,D)$ and the following functional dependencies on

$S\{A \rightarrow BCD, B \rightarrow C, CD \rightarrow A\}$

1. The decomposition is lossless

2. The decomposition is dependency preserving

a. Both b. NONE c. only 2 d. only 1 **ANSWER:: B**

35). In the relation $R(A,B,C,D)$ with functional dependencies $F\{AB \rightarrow CD, C \rightarrow A, D \rightarrow B\}$

how many number of candidates keys are there for the above relation?

a. 3 b. 4 c. 2 d. none of these **ANSWER:B**

36). Which of the following statement is true?

a. The relational $R(ABCDE)$ with FD'S $F\{A \rightarrow B, B \rightarrow CE, C \rightarrow D\}$ is in 3NF

- b. The relation R(ABCDE) with FD'S F={AB->CDE,C->A,D->E} is in BCNF
- c. The relation R (ABCD) with FD'S F={A->BCD,B->CD,C->D} is in 3NF
- d. The relation (ABCD) with FD'S F={A->B,B->C,C->D} is in 2NF

ANSWER:: D

37).CONSIDER the relational and its sample data.(consider that these are the only tuples for the given relation?)

Emp No	DeptNo	Proj No
1001	01	12
1001	01	13
1002	01	12
1003	01	14

- 1. The functional dependency (Emp No, Dept NO)->ProjNo holds over R
- 2. The functional dependency DeptNo->ProjNo holds over R
- 3. The functional dependency Emp No -> DeptNo holds over R
- 4. The functional dependency ProjNo -> DeptNo holds over R
- 5. The functional dependency (Emp No, ProjNo)->DeptNo holds over R

- a. 3,4 and 5
- b. 1,2 and 3
- c. all of the above
- d. 2,3 and 4

ANSWER:: A

38).Consider the relation 'properly (propeertyld village name, Lot# Area) with the following functional dependencies.

- 1. Propertyld-> (village anme,lot#,area)
- 2. (Villagename, lot#)->(propertyld,area)
- 3. Area->village name

Which of the following statement is false with respect to the information given above?

- a. The functional dependency area->village name violates BCNF
- b. The relational 'property' is in BCNF
- c. all of the above
- d. The relation 'property; is in 3NF

ANSWER: B

39). consider the flowing table obtain using student and instructor

The relation student and instructor as given below. Please note that Fname and Lname also denote the first name and last name respectively

instructor

Fname	Lname
Ajith	Gamage
Sujith	Hewage
Saman	Per era
Kasun	Peiris
romesh	dias

Student

First Name	Last Name
Saman	Per era
Romesh	Dias
Jeeva	Silva
Nadee	Awls
Kumara	Costa
Geetha	Zoysa
Prasad	Fernando

ANSWER ::C

- a. the set operation such as CARTESIAN PRODUCT and DIVISION CAN BE APPLIED ON THESE TWO RELATIONS
- b. the two relations are not union-compatible since their attributes names differ

c. to find out the student who are not instructors, it is necessary to perform the operations student % instructor

d. the set operation such as CARTESIAN PRODUCT and DIVISION CAN BE APPLIED ON THESE TWO RELATIONS

40). The terms in list-I have been mapped to list-II so that it corresponds to the mapping process of the ER model into a relational model. Which of the following represents the mapping process?

List-I	list-II
A. entity type	1. primary or (secondary) key
B. key attributes	2. Domain
C. composite attributes	3. relation and foreign key
D. multivalued attributes	4. set of simple component attributes
E. value set	5. relation

Select one:

- a) 5 1 4 3 2
- b) 3 1 4 2 5
- c) 3 1 4 5 2
- d) 5 1 3 4 2

ANSWER::A

41). Consider the following statements .

1. An entity integrity constraint states that no primary key value can be null.
2. A referential integrity constraint is specified between two relations.
3. A foreign key cannot be used to refer to its own relation.

Identify which of the above statements are correct.

- a). Only 1 and 3 b). Only 2 and 3 c). Only 1 and 2 d). All of these.

ANSWER::C

42). which of the following statements is not correct with respect to normalizations?

- a). Normalization is a formal technique that can be used at any stage of the database design.
- b). Normalization can be used as a validation technique to check the structure of relations which may have been created using ER modeling.
- c). The process of normalization through decomposition must achieve the lossless join property at any cost whereas the dependency preservation property is sometimes sacrificed.
- d). None of these

ANSWER::D

43). Consider the relation interview(CandidateNo, InterviewDate, InterviewTime, StaffNo, RoomNo) and the following functional dependencies.

FD1: CandidateNo, InterviewDate → InterviewTime, StaffNo, RoomNo

FD2: RoomNo, InterviewDate, InterviewTime → StaffNo, CandidateNo

FD3: StaffNo, InterviewDate → RoomNo

Which of the following is/are correct?

- a). Interview is in BCNF b). Interview is not in 3NF

c). The FD3 violates 3 NF d). The FD3 violates BCNF

ANSWER::C

DATABASE DESIGN AND NORMALIZATION

1). Consider the following g in the given tables

A	B	C
a1	b1	c1
a1	b1	c2
a2	b1	c1
a2	b1	c3

What is the number of functional dependencies in the canonical cover of this relation? **Answer: 2**

2). Consider relation r(P, Q, R, S) with functional dependencies.

$PQ \rightarrow R$

$PQ \rightarrow S$

$R \rightarrow P$

$S \rightarrow Q$

Find the number of candidates keys in relation.

Answer: 4

3). Given a relation R with four attributes A, B, C, D the following FD's holds for R?

$AB \rightarrow C$ $AB \rightarrow D$ $C \rightarrow A$ $D \rightarrow B$, Identify the best normal form that R satisfies?

a). 1 NF b). 2NF c). 3 NF d). BCNF

Answer: C

4). Find the highest normal form of the relation R(A, B, C, D) that holds following FDs.

$A \rightarrow B$ $B \rightarrow D$ $A \rightarrow C$ $BC \rightarrow A$

a). 1 NF b). 2 NF c). 3 NF d). BCNF

Answer: A

5). F and G are two Fds sets

F

G

$P \rightarrow Q$

$P \rightarrow R$

$R \rightarrow P$

$R \rightarrow Q$

$PQ \rightarrow R$

$QR \rightarrow P$

Which of the following is correct?

a). F covers G but G does not over F b). G cover F but F doesnot over G

c). F covers G and G covers F d). None of these

Answer: C

6). A relation R(A, B, C, D, E, F) holds following Fds

$AB \rightarrow C$ $C \rightarrow D$ $D \rightarrow EA$ $E \rightarrow F$ $F \rightarrow B$

Find the number of candidate keys of R.

Answer: 8

7). Given R(A, B, C, D) with FDs $F = \{AB \twoheadrightarrow CD, C \rightarrow A, B \rightarrow D\}$ is decomposed into R1 (A, B, C) and R2 (B,C,D) then which of the following statement is true about decomposition of R?

- a). Lossless and dependency preserve decomposition.
- b). Loss less and not dependency preserve decomposition
- c). Lossy and dependency preserve decomposition
- d). Lossy and not dependency preserve decomposition

Answer: A

8). A relation R(A, B, C, D, E, F, G) holds following FDs.

$B \rightarrow ACD$

$BD \rightarrow E$

$EFG \rightarrow H$

$F \rightarrow GH$

Which of the following FD can be removed without altering the key of the relation R?

- a). $B \rightarrow ACD$
- b). $BD \rightarrow E$
- c). $EFG \rightarrow H$
- d). $F \rightarrow GH$

Answer: C

9). Consider the following statement

- i). Decomposition a relation into BCNF may not be lossless.
- ii). If R and S are two relation in BCNF the natural join of R and S is also in BCNF.

Which of the following is correct?

- a). Only I
- b). Only ii
- c). Both I and ii
- d). None of these

Answer: A

10). Consider the following statements.

- i). any candidate key is a super key for that relation.
- ii). All attributes of a relation form a super key.
- iii). A relation decomposition is NOT always lossless.
- iv). If we define foreign key in relation R1 the DBMS checks foreign key constraints when ever a tuple in R is deleted.

True statement are:

- a). I, ii, iv
- b). i, ii, iii
- c). All are true
- d). None of these.

Answer: C

11). Consider a relation R(A, B, C, D) with FDs $A \rightarrow B$ and $C \rightarrow D$ then the decomposition of R into R1 (A, B) and R2(C, D) is

- a). Dependency preserving and lossless join
- b). Lossless but NOT dependency preserving
- c). Dependency preserving but not lossless join
- d). Not Dependency preserving and not lossless join

Answer: C

12). Given a relation R(A, B, C, D) with FDs set $\{A \rightarrow B, B \rightarrow C, C \rightarrow B\}$

- i). Lossless decomposition is always possible for R
- ii). Dependency preserving decomposition is always possible for R.

Assume decomposition includes all the attributes of R.

a). Both I and ii true b). I is true and ii is false c). I is false and ii is true d). Both I and ii are false **Answer: B**

13). Consider the following statement

P: Canonical cover may not be unique

Q : $F = \{AB \rightarrow C, A \rightarrow B, B \rightarrow A\}$ Canonical cover of F is unique

Which of the above statements true.

a). Both P and Q true b). P is true and Q is false c). P is false and Q is true d). Both P and Q are false **Answer: B**

14). Consider a relation R(A, B, C, D, E) holds FDs : $F = \{AB \rightarrow C, C \rightarrow D, B \rightarrow E\}$ is decomposed into R1(A, B, C) and R2(C, D) then this decomposition.

a). Lossless and dependency preserving b). Dependency preserving and not lossless
 c). Lossless and not dependency preserving d). Not dependency preserving and not lossless **Answer: C**

15). Consider the following FD set on R(A, B, C) $F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$

The canonical cover of this set is

a). $A \rightarrow B$ and $B \rightarrow C$ b). $A \rightarrow BC$ and $B \rightarrow C$ c). $A \rightarrow BC$ and $B \rightarrow C$ d). $B \rightarrow BC$ and $AB \rightarrow C$ **Answer: A**

16). Consider a relation R(A, B, C, D) holds FDs $AC \rightarrow B, BD \rightarrow C, CE \rightarrow D, DA \rightarrow E, EB \rightarrow A$.

Find number of keys that contain attribute A. **Answer: 3**

17). How many maximum relation required for the following relation R(A B C D E) with FD ($A \rightarrow BF, CD \rightarrow E, B \rightarrow D, E \rightarrow A$) into BCNF without violation of lossless and dependency preserving decomposition?

a). 2 b). 3 c). 4 d). 5 **Answer: B**

18). How many super keys in the following relation R(A B C D E) ($AB \rightarrow C, BC \rightarrow D, CD \rightarrow A, AD \rightarrow B$).

a). 11 b). 8 c). 10 d). 9 **Answer: D**

19). Choose the correct statement.

a). If table R has a foreign key constraint referencing table S then each tuple in R is necessarily related to some tuple in S via foreign key.

b). The SQL statement delete from R might cause tuples in the table other than just R to be deleted.

c). NULL values Can be used to opt a tuple out of enforcement of a foreign key.

d). Anything that can be expressed in an ER diagram via ternary relationship can be expressed some other logically equivalent way without the use of ternary relationship. **Answer: D**

20). Consider the following schema.

R(C, D) Q(B, C) P(A, B)

C is a foreign key in Q referencing R(C) on delete cascade B is foreign in P referencing Q(B) on delete set null suppose current content of P, Q, R as follows.

P	Q	R
AB	AB	AB
ab	ab	ab
ab	aa	ab

After executing delete from R what tuples P will contain?

- a). (a, NULL) and (b, b) b). (a, NULL) AND (B, NULL) c). (b,b) only d). P will not be changed **Answer: B**

21). In the most general case, if table r has foreign key constraint referencing table S then **Answer: C**

- a). each tuple in R is related to one or more tuples in S. b). Each tuple in R is related to exactly one tuple in S.
c). Each tuple in R is related to Zero or one tuple in S d). Each tuple in R is related to zero or more tuples in S.

22). Consider the following statements

- i). An entity integrity constraint states that no primary key value can be null.
ii). A referential integrity constraint is specified between two relations.
iii). A foreign key can't be used to refer to its own relation

Identify which of the above statements are correct?

- a). Only I and (iii) b). only (ii) and (iii) c). Only (i) and (ii) d). All of these **Answer: C**

23). If both the functional dependencies $X \rightarrow Y$ and $Y \rightarrow X$ hold for two attributes X and Y then the relationship between X and Y is

- a). 1 : 1 b). M : 1 c). 1 : M d). None of these **Answer: A**

24). R(A, B, C, D) is a relation which of the following does not have a lossless join dependency preserving BCNF decomposition.

- a). $A \rightarrow B, B \rightarrow CD$ b). $A \rightarrow B, B \rightarrow C, C \rightarrow D$ c). $AB \rightarrow C, C \rightarrow AD$ d). $A \rightarrow BCD$ **Answer: C**

25). A functional dependency of the form $X \rightarrow Y$ is trivial if

- a). $Y \subseteq X$ b). $Y \subset X$ c). $X \subseteq Y$ d). $X \subset Y$ **Answer: A**

26). A relation P(A, B, C) has no non-trivial functional dependencies, and then what should be the set of candidate keys for the relation?

- a). {ABC} b). {A, B, C} c). {AB, BC, CA} d). None of these **Answer: A**

27). In a relation is in BCNF, then which of the following statement is always true?

- a). The relation does not have any type of data redundancy
b). The relation does not have data redundancy (which is due to functional dependency).
c). The relation may have data redundancy (which is due to functional dependency).
d). None of these. **Answer: B**

28). Consider the following statement

- 1). Prime attribute transitivity determined by super key is allowed by 3NF.
2). Non prime attribute transitivity determined by super key is allowed by 3NF.
3). Every partial dependency is transitive dependency.
4). Candidate key is only determined by functional dependencies not by MVD's.

Which of the above statements are true.

- a). 1, 2 and 4 only b). 1, 3 and 4 only c). 1, 2 and 3 only d). All of these. **Answer: B**

Topic Name :::: SQL

1). Consider the relations:

S(Sid, sname, city)

P(pid, pname, color)

SP(sid, pid)

Consider the following SQL query

Select distinct sname

From S

Where EXISTS

(select * from SP where SP. sid = s.sid AND SP. pid = 'P1')

The above query represents which of the following ?

- a). Get supplier names from suppliers who supply part P1 b). Get supplier names who supply part P only
c). Get supplier name who does not supply part P1 d). None of these. **Answer: D**

2). Which of the following statement is not correct about SQL?

- a). SQL is a declarative query language in which we declare what we want but not how to compute.
b). In SQL NULL is ignored in any aggregation function.
c). For any SQL query the exist a unique translation into relation algebra. **Answer: C**
d). schema Normalization reduces potential data redundancy but not enhances query efficiency.

3). Consider the following database schema.

Course (course_no, dept-Name)

Enroll (stud _ id, course _ no, status)

SELECT stud _ id

FROM course C, Enroll E

WHERE C.course_no=E.course_no and dept_name = 'CS'

EXCEPT

SELECT stud_id

FROM Course C, Enroll E

WHERE E.course_no = C.course_no AND

Dept.name = 'ME'.

Above SQL QUERY

- a). Finds the students who are enrolled in all courses by CS department are not enrolled in all courses offered by ME department
b). Finds the students who are enrolled in any course by CS department are not enrolled in all courses offered by ME department

c). Finds the students who are enrolled in atleast one course by CS department and not enrolled in any course offered by ME department

d). Finds the students who are enrolled in all course by CS department and not enrolled in any courses offered by ME department. **Answer: C**

4). Consider the relation

Project(pno, pname, budget, city)

Q1: SELECT Pname

From proj

WHERE NOT (budget <= ANY (SELECT budget

FROM proj

WHERE city = 'KANPUR'))

Q1 computes.

a). Name of the projects whose budgets is less than atleast one project in KANPUR.

b). Name of the projects whose budgets is greater than some project in KANPUR.

c). Name of the projects whose budgets is less than all project5 in KANPUR.

d). Name of the projects whose budgets is greater than all project in KANPUR. **Answer: D**

5). Consider the relations

Proj(pid, pname,budget,city)

Q: SELECT pname

FROM proj P1

WHERE NOT EXISTS

(select budget

From proj P2
where city ='DELHI'

AND P1. Budget <= P2. Budget)

Q finds project name whose budget is

a). greater than some project in DELHI

b). greater than all project in DELHI

c). less than all project in DELHI

d). Less than any project in Delhi **Answer: B**

6). Consider the folowiong rlations

Emp(eno, ename, titile , city)

Project(pno, pname, budget)

Works (eno,pno)

Pay(title, salary)

Which query finds what fraction of the budget is spend on salaries for the people working on that project?

a). SELECT P.pno, pname, sal/budget AS frac

From project P, (Select pno, sum(salary))

AS sal FROM works, Emp, Pay WHERE works.eno = Emp.eno AND Emp.title = ay.title

Group by pno) AS Q WHERE P. pno = Q. pno ORDER BY budget ;

b). Select P.pno, pname sum(salary) budget AS frac From project P, works, W.Emp E, Pay'

WHERE P.pno = W.pno AND W. eno = E.eno AND E.title = Pay . title

GROUP BY P.pno, budget ORDER BY budget

c). Both a and b

d). None of these

Answer: C

7). Consider the following relations:

Bank (bname, city)

Travel (pname, city)

SELECT T1.pname FROM Travel T1 WHERE NOT EXISTS (SELECT B. city From Bank B

WHERE B.bname = 'SBI'

EXCEPT

SELECT T2.city FROM Travel T2 Where T1.pname = T2.pname)

This query finds name of the persons.

Answer: C

a). Who have not travelled in any city where SBI is located b). Who have not travelled in all city where SBI is located

c). Who have travelled in all city where SBI is located d). Who have travelled in any city where SBI is located

8). SELECT 1

FROM 2

WHERE 3

GROUP BY 4

HAVING 5

ORDER BY 6

What is correct order for evaluating an SQL statement ? Where order is 6 digit number. **Answer: 234516**

9). Which of the following queries will give the names of the employees who are earning maximum salary?

a). Select name from emp where sal = (select max(sal) from emp)

b). Select name from emp where sal > = (select sal from emp)

c). Both a) and b) are correct queries but the processing time is too high in b) than in a)

d). Both a and b are correct but processing is too high a) than in b)

Answer: A

10). Which of the following aggregate function is does not ignore nulls its result?

a). COUNT B). COUNT * C). MAX D). MIN

Answer: B

11). A database schema is specified by a set of definition expressed by a language called **Answer: C**

a)., Procedural language b). Data Manipulation language c). Data definition language d). Data Query language

12). Consider the following employee schema employee(name, salary, dept.no, phone).

Consider the following SQL query.

Select ename from employee where ename like “ ___ ” It returns the name of employee

- a). Whose name is atleast three characters long.
- b). Whose name is most three characters long
- c). Whose name is exactly three characters long.
- d). Whose name is “ ___ ” **Answer:C**

13). Consider the following relational schema

Employee (ename , salary, job)

Consider the following SQL queries and identify which of them are correct?

- a). Select distinct ename, job from employee
 - b). Select ename, distinct job from employee
 - c). Select distinct ename from employee
- Answer:: A, C**

14). Consider the following relation schema:

Author (A_name, A_city)

Book (B_title , A_name, P_name, Price)

Publisher (P_name, P_city)

From the queries given below, which query is syntactically and logically incorrect for above schemas:

- a). SELECT B- title, Price from BOOK, WHERE P-name IN (SELECT P_name, P_city from publisher where P-city = “Delhi”)
- b). SELECT P_name, A_Name, B_title from BOOK where price BETWEEN 1000 AND (select avg(price) from BOOK where P_name = “TMH”)
- c). SELECT A_name A_city, Count(P_name) FROM Author, BOOK, Where Author. A_name = BOOK. A_name GROUP by A_name having COUNT (P_name) > 5
- d). All of these **Answer: D**

15). Consider the following table orders

Order _ Id	Order _ Price	Customer
1	500	Rajesh
2	300	Ramesh
3	100	Suresh
4	600	Rajesh
5	800	Rajesh
6	900	Suresh
7	400	Rakesh

Number of tuples if we execute the following query on the above table is **Answer: 3**

Select Customer, Sum (order_price) From orders Group by Customer Having Sum (order _ prie) <= 1000

16). Consider the following relational schema student (Sid, Sname)

SID	Sname
1	A

2	B
3	Null
4	Null

Now consider the following queries

Q1: Select count (*) from student

Q2: Select count (Sid) from student

Query q1 and Q2 returns respectively.

a). 4 and 3 b). 4 and 4 c). 3 and 3 d). Invalid table

Answer: A

A.A.N.M. & V.V.R.S.R. Polytechnic, Guollavalleru, Krishna District , Andhra Pradesh