EPT-TEST-14(DBMS)
Duration :-60 mins
No of questions :- 25

1

A secondary index on a non-candidate key.

Select your answer

A is dense and cannot have duplicates

B is dense and can have duplicates

C is sparse and cannot have duplicates

D is sparse and cannot have duplicates

Marks: - +1
Type: - MCQ
Level: - Easy

2

Database that are designed and managed specifically to meet information needs are called

Select your answer

A Database Management system

B Data Warehouses

C Transaction databases

D Production databases

Marks: - +1
Type: -
MCQ
Level: -
Easy

3

Attribute Y is said to be fully functionally dependent on attribute X if it is

Select your answer

A Functionally dependent on attribute X

B Functionally dependent on any proper subset of attribute of X

C It is in 2nd Normal form

D Primary key and X is the candidate key.

Marks: - +2
Type: - MCQ
Level: - Moderate

4

Consider a following schedule S on 4 transaction T_1, T_2, T_3, T_4 and on two data item A and B

$\mathcal{S} : R_4(\mathrm{A}) \cdot R_2(\mathrm{A}) \cdot R_3(\mathrm{A}) \cdot W_1(\mathrm{B}) \cdot W_2(\mathrm{A}) \cdot R_3(\mathrm{B}) \cdot W_2(B)$

Which of the following is true

Select your answer

A The Schedule cannot be serializabe

B The Schedule is equivalent to T_3, T_4, T_1, T_2

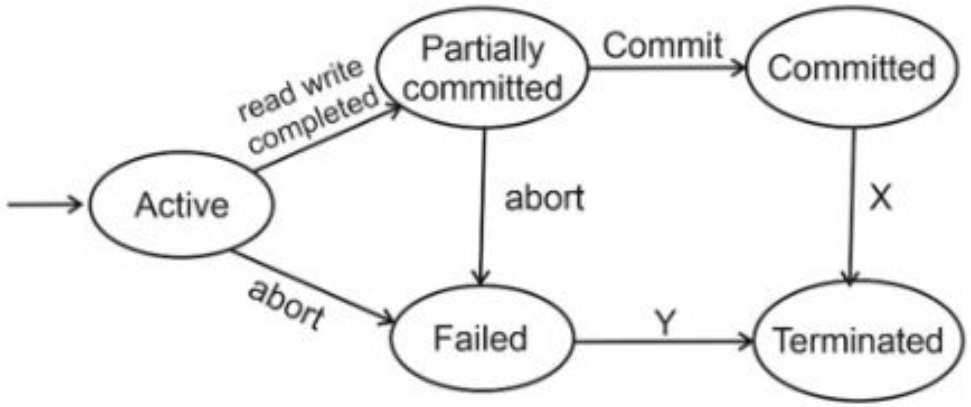
C The Schedule is equivalent to T_1, T_4, T_3, T_2

D none of the above

Marks: - +2
Type: - MCQ
Level: - Moderate

5

Consider the following state transition diagram for transaction execution.



For any transaction 'T', what does X and Y denote:

Select your answer

A
X : undo all performed operations of T
Y: redo all performed operations of T

B
Both X and Y denote: redo all performed operations of T

C
Both X and Y denote: undo all performed operations of T

D
X: redo all performed operations of T
Y: undo all performed operations of T

Marks: - +2
Type: - MCQ
Level: - Moderate

6

Which among the following is/are true for B^+-tree index?

Select one or more answers

A. In B^+-tree indexing each node can have only one key stored in it.

B. In B^+-tree leaf nodes are usually linked together to provide ordered access on search field of records.

C. For B^+-trees internal nodes have only block pointers and search keys.

D. In B^+-trees structure of leaf note is same as that of structure of internal nodes.

Marks: - +2
Type: - MSQ
Level: - Moderate

7

Consider the following SQL query over the relation STUD(S_id,S_name,Marks) where 'S_id' is the primary key:

```
Select S_id, S_name
From STUD
Where S_id> 101 and S_id<119;
```

Following are the two statements given:

Statement 1: For the above SQL query B^+Tree is preferred.

Statement 2: In B^+ Trees leaf nodes are linked together to provide ordered access to group of records.

Which among the following is true?

Select one or more answers

A. Statement 1 is correct but statement 2 is incorrect.

B. Statement 2 is correct, but statement 1 is incorrect.

C. Both statement 1 and statement 2 are correct, but statement 2 is not the correct reason for statement 1.

D. Both statement 1 and statement 2 are correct, statement 2 is the correct reason for statement1.

Marks: - +1
Type: - MCQ
Level: - Easy

8

B^+ Tree indexing is used on a relation Student (S-id, Name), where 'Sid' is the primary key. B^+ Tree can store maximum 4 keys and 2 levels of indexing is used. In order to retrieve records from 'Student' relation following SQL query is used:

```
Select S_id
From Student;
```

What are the maximum possible Sid's that can be retrieved by above query?

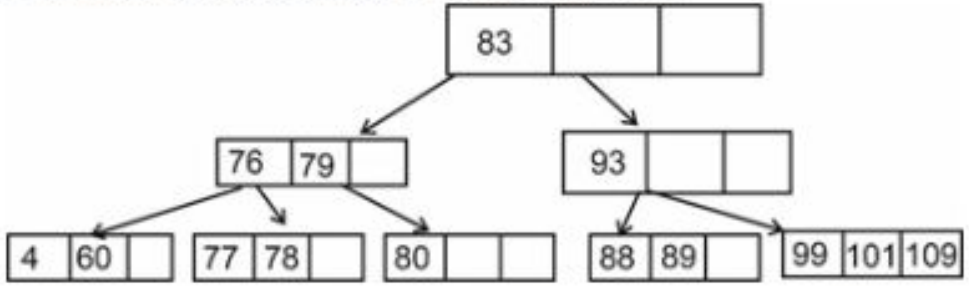
Enter your answer below

Type your answer here....

Marks: - +2
Type: - NAT
Level: - Moderate

9

Consider the following B Tree Structure.



Suppose following are the keys which needs to be removed from the given B Tree structure :

60, 4, 89, 78, 109, 101

If all these deletions are done sequentially. Which among the following is/are correct?

Select one or more answers

A Deletion of '4' will reduce the number of nodes in B Tree.

B Deletion of '60' will not change the structure of B Tree.

C Deletion of '78' will change the structure of B Tree.

D Deletion of '89' will lead to underflow condition in that node.

Marks: - +2
Type: - MSQ
Level: - Moderate

10

Consider the following two statements about concurrency control protocols:
Statement 1: Concurrency control Protocols are used to design a schedule, having 'n' transactions, in such a way that two transactions executing concurrently are not allowed to work on same data item.
Statement 2: Concurrency control protocols are used to design a Schedule, having 'n' transactions, in such a way that two or more transactions executing concurrently, while working on same data item, should never cause inconsistency.
Based on the above two statements, which one of the following is/are true?

Select your answer

A Only statement 1 is correct

B Only statement 2 is correct.

C Both statement 1 and statement 2 are correct.

D None of the statement is correct.

Marks: - +2
Type: - MCQ
Level: - Moderate

11

Which one among the following statements is/are true about 2 phase Locking Protocol.

Select one or more answers

A Every 2PL schedule is always conflict serializable.

B Deadlock can never be possible in a 2PL schedule.

C Starvation may occur in a 2PL schedule.

D Every 2PL schedule is Recoverable.

Marks: - +2
Type: - MSQ
Level: - Moderate

12

Which among the following are correct?

Select one or more answers

A $\pi_{list1}(\pi_{list2}(Relation))$ can be replaced by $\pi_{list2}(\pi_{list1}(Relation))$

B $\sigma_{condition}(\pi_{list}(\text{Relation}))$ can be replaced by $\pi_{list}(\sigma_{condition}(Relation))$

C $\sigma_{condition1}(\sigma_{condition2}(Relation))$ can be replaced by $\sigma_{condition2}(\sigma_{condition1}(Relation))$

D $\pi_{list}(\sigma_{condition}(Relation))$ can be replaced by $\sigma_{condition}(\pi_{list}(Relation))$

Marks: - +1
Type: - MSQ
Level: - EASY

13

Consider the following two Queries.

Query 1:
```
Select b_no
From Books
Where Price = (Select MAX(price)
        From Books
        Where Price < (Select MAX(price)
                From Books));
```

Query 2:
```
Select b_no
From Books B1
Where (Select count (Distinct B2.Price)
        From Books B2
        Where B1.Price < B2.Price)=1;
```

Select your answer

A. Both Query 1 and Query 2 will tell b_no with highest price

B. Query 1 will tell b_no of book having highest price and Query 2 will tell b_no of book having second highest price.

C. Query 1 will give b_no of book having second highest price and query 2 will give b_no of book having highest price.

D. Both Query 1 and Query 2 will give b_no with second highest price.

Marks: - +2
Type: - MCQ
Level: - Moderate

14

Consider the following relational algebra queries over the relations.

R(a, b)

S(c, d)

T(a, c)

Query 1: ((R ⋈ S) ⋈ T)

Query 2: (R ⋈ (S ⋈ T))

Query 3: (R ⋈ S)

Query 4: (R × S)

Where '⋈' denotes natural join and 'X' denotes cross product.

Which of the following is/are true?

Select one or more answers

A Query 1 and Query 2 will give same number of tuples

B Query 3 and Query 4 will give same number of tuples

C Query 1 and Query 2 will give different number of tuples

D All the Queries will have different result

Marks: - +2
Type: - MSQ
Level: - Moderate

15

Consider the following two schemas, School (Sid, S.Name) and College (Cid, C.Name)
Given the following SQL query:
Select Sid, S.Name.
From School
Where (S.id, S.Name) IN (Select Cid, C.Name From College);
What does the following query retrieves?

Select your answer

A Sid and S.Name of all students who studied only in school

B Sid and S.Name of all students who studied only in college

C Sid and S.Name of all students who studied in school and college both

D Retrieves Sid and S.Name of all students who studied either in school or in college but not both.

Marks: - +2
Type: - MCQ
Level: - Moderate

16

Consider a relation R (A, B, C, X, Y) –

A	B	C	X	Y
101	544	A	Rahul	CSE
102	344	B	Mahesh	EE
101	349	A	Ravi	IT
103	129	C	Rahul	ME
104	107	D	Deepak	CE

Given the relation decomposed into R_1 (A, B, C) and R_2 (C, X, Y) then the following statements is/are true?

Select one or more answers

A R_1 and R_2 are lossless decomposition.

B R_1 and R_2 are lossy decomposition.

C $R_1 \cap R_2 = \phi$ for lossless decomposition.

D Attribute 'C' is not a primary key.

Marks: - +2
Type: - MSQ
Level: - Moderate

17

If functional dependencies:
F = {ABC → QR}, then F entails which of the following functional dependencies?

Select one or more answers

A ABC → R

B AQBC → QR

C PABC → QRP

D AB → QR

Marks: - +2
Type: - MSQ
Level: - Moderate

18

Given that a relation R is in 2NF but not in 3NF. Which of the following needs not to be true for R?

Select your answer

A. R does not have any multivalued attributes.

B. R has no non-prime attribute transitively dependent on candidate key in R.

C. R has no non-prime attribute partially dependent on candidate key in R.

D. None

Marks: - +1
Type: - MCQ
Level: - EASY

19

What will be in the root of the B-tree after the following sequence of operations is performed on the B-tree with a max-degree of 3?
Insert(5), insert(6), insert(10), insert(1), insert(8), delete(5), delete(6)

Select your answer

A 8

B 1

C 10

D 1, 8

Marks: - +2
Type: - MCQ
Level: - Moderate

20

Which of the following statements is/are false?

Select one or more answers

A For any database relation, both clustering and primary index is possible

B For B+ tree, number of internal nodes = number of leaf nodes – 1

C If same size of blocks are allocated for indexing, access cost is less using B+ tree as compared to B tree for the given number of keys

D None of these

Marks: - +2
Type: - MCQ
Level: - Moderate

21

Which of the following option is correct?

Select your answer

A All recoverable schedules are conflict serializable.

B All strict schedules may or may not be serial.

C All strict schedules are conflict serializable.

D All conflict serializable schedules are free from cascading rollbacks

Marks: - +2
Type: - MCQ
Level: - Moderate

22

Consider a B+ tree with Block size 514. P_r = 4B, key = 8B and P_b = 2B. Then the maximum number of keys that can be accommodated in a leafnode are

Select your answer

A 42

B 43

C 41

D 44

Marks: - +2
Type: - MCQ
Level: - Moderate

23

Let E_1 and E_2 be two entities and R is a Many to many relationship between R has two attributes a_1 and a_2. The minimum number of tables required are

Enter your answer below

Type your answer here....

Marks: - +2
Type: - NAT
Level: -
Moderate

24

A secondary clustering index is defined on the fields which are of type

Select one or more answers

A Key and Ordering

B Key and Non-ordering

C Non-key and Ordering

D Non-key and Non-ordering

Marks: - +2
Type: - MSQ
Level: - Moderate

25

Consider the following transaction involving two bank accounts x and y:

```
read (x);
x = x – 50;
write(x);
read (y);
y = y + 50;
write (y);
```

Which of the following constraints fail, if transaction is fail just after write (x); operation?

Select your answer

A Atomicity

B Durability

C Isolation

D None of these

Marks: - +1
Type: - MCQ
Level: - EASY

Answer Key

1. B	2. B
3. A	4. C
5. D	6. B,C
7. D	8. 20
9. B,C	10. B
11. A,C	12. B,C
13. D	14. A,B
15. C	16. B,D
17. A,B,C	18. B
19. A	20. A
21. B	22. A
23. 3	24. B,D
25. A	