Possible Answers :

12

Question Number : 37 Question Type : SA

Correct Marks : 2.5

Question Label : Short Answer Question

What is the average fixed cost per car washed that is incurred when Mr M operates the business by hiring the number of employees identified in previous question (round your answer to one decimal place)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

41.00 to 42.00

DBMS

Number of Questions : 17

Section Marks : 50

Question Number : 38 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL: DATABASE MANAGEMENT SYSTEMS"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

A. ✔ Yes

B. ✖ No

Question Number : 39 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following statements.

1. If a relation R is in 3NF and for each non-trivial functional dependency, the RHS is a super key, then R is in BCNF as well.
2. If a relation R is in BCNF and does not consist of any multivalued dependency, then R is in 4NF as well.
3. If a relation R is in 2NF and does not contain any transitive dependencies, then R is in BCNF as well.

Choose the correct option.

Options :

A. ✖ Statements 1 & 3 are correct.

B. ✔ Only Statement 2 is correct.

C. ✖ Statements 2 & 3 are correct.

D. ✖ All the statements are correct.

Question Number : 40 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following code for creating a table STUDENTS in a PostgreSQL database using Python.

```
import psycopg2
def createTable():
    conn = None
    try:
        conn = psycopg2.connect(database = "mydb", user = "myuser",
            password = "mypass", host = "127.0.0.1", port = "5432")
        cur = conn.cursor()
        ______A_______('''CREATE TABLE STUDENTS
            (roll_no INT PRIMARY KEY     NOT NULL,
            student_name VARCHAR(40)    NOT NULL,
            department VARCHAR(40)     NOT NULL)''')
        conn.commit()
        print ("Table created successfully")
        _______B________
    except (Exception, psycopg2.DatabaseError) as error:
        print(error)
    finally:
        if conn is not None:
            conn.close()
createTable()
```

Choose the correct option to fill in the blanks A and B, such that the STUDENTS table is created in mydb database.

Options :

A. ✖ A: cur.conn.sql, B : cur.execute()

B. ✔ A: cur.execute, B : cur.close()

C. ✖ A: cur.open, B : cur.execute()

D. ✖ A: cur.execute, B : cur.conn.close()

Question Number : 41 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider an **NPTEL** database having the following tables:

students(*roll_no*, *sname*, *age*, *university*)
course(*course_id*, *cname*, *grade*, *roll_no*)

Assume that the number of tuples in both the tables is quite large.
Suppose the following two queries are executed on these tables.

1. ```
   SELECT s.sname, c.grade FROM students s NATURAL JOIN course c
   WHERE university = 'Mumbai'
   ```

2. ```
   SELECT sname FROM students
   WHERE roll_no = 'ME003'
   ```

Which of the following statements is true?

Options :

A. ✔ Query 1 will execute more efficiently when multitable clustering file organization scheme is used.

B. ✖ Both queries will execute more efficiently when sequential clustering file organization scheme is used.

C. ✖ Query 1 will execute more efficiently when sequential clustering file organization scheme is used.

D. ✖ None of these

Question Number : 42 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following statements.

1. Array, stack, tree, graph, queue are some types of linear data structure.
2. In non-linear data structure, data elements can be traversed in multiple ways.

Choose the correct option.

Options :

A. ✖ Only statement 1 is correct.

B. ✔ Only statement 2 is correct.

C. ✖ Both the statements are correct.

D. ✖ Both the statements are incorrect.

Question Number : 43 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following statements about a **data dictionary**:

1. It is a collection of names, definitions, and attributes about data elements that are being used or captured in a database
2. DDL commands are capable of updating data dictionary.
3. The data dictionary cannot be updated once a database is created.

Options :

A. ✖ All the statements are correct.

B. ✖ Statements 1 & 3 are correct.

C. ✖ Only statement 1 is correct.

D. ✔ Statements 1 & 2 are correct.

Question Number : 44 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following methods are used to read the result of a query using Python psycopg2 module?

1. fetch()
2. fetchone()
3. fetchmany()
4. fetchall()

Options :

A. ✖ 1,2,3

B. ✔ 2,3,4

C. ✖ 1,3,4

D. ✖ All of these

Question Number : 45 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Given relation $\mathrm{R}(J, K, L, M)$ and a set of functional dependencies

$\mathcal{F} = \{K \rightarrow M, M \rightarrow J, KL \rightarrow J\}$

Which of the following is the correct canonical cover for the given set of functional dependencies?

Options :

A. ✖ $\mathcal{F} = \{K \rightarrow M, M \rightarrow J, L \rightarrow J\}$

B. ✖ $\mathcal{F} = \{M \rightarrow J, K \rightarrow J\}$

C. ✔ $\mathcal{F} = \{K \rightarrow M, M \rightarrow J\}$

D. ✖ $\mathcal{F} = \{K \rightarrow M, KL \rightarrow J\}$

Question Number : 46 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the relation **Term1** shown in Figure 1.

Student	Course	Instructor	Credit
MSD	Python	Kumar	_____
MSD	DBMS	Patel	_____
MSD	Python	Patel	_____
MSD	DBMS	Kumar	_____

Figure 1: Relation **Term1**

Choose the correct values in *Credit* column (in the same order) such that the following MVDs are true:

$Student \rightarrow\rightarrow Course$
$Student \rightarrow\rightarrow (Instructor, Credit)$

Options :

A. ✖

Credit
7
8
9
6

B. ✖

Credit
9
7
9
7

C. ✔

Credit
9
7
7
9

D. ✖

Credit
7
7
9
9

Question Number : 47 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a magnetic disk with the following specifications. The magnetic disk consists of 16 platters, and has information recorded on both the surfaces of each platter. Each platter's surface is logically divided into 128 tracks, each of which is subdivided into 256 sectors. Find the storage capacity of a track. (Given, sector size is 512 bytes.)

Options :

A. ✖ 64 KB

B. ✔ 128 KB

C. ✖ 256 KB

D. ✖ 512 KB

Question Number : 48 Question Type : MSQ

Correct Marks : 3

Question Label : Multiple Select Question

Consider a relation **cars**(*name, model, price*). If all cars have the same price, then which of the following functional dependency/dependencies hold(s) in **cars**?

Options :

A. ✔ *name* → price

B. ✖ *price* → model

C. ✔ *model* → price

D. ✖ *price* → name

Question Number : 49 Question Type : MSQ

Correct Marks : 3

Question Label : Multiple Select Question

Choose the SQL statement(s) that can result in an SQL Injection that retrieves all information from the customers table.

Options :

A. ✖
```
SELECT * FROM customers WHERE cus_id = 'M002' and 'X' = 'Y'
```

B. ✖
```
SELECT * FROM customers WHERE cus_id = 'M002' or '8' <= '5'
```

C. ✖
```
SELECT * FROM customers WHERE cus_id = 'M002' and '8' <= '5'
```

D. ✔
```
SELECT * FROM customers WHERE cus_id = 'M002' or  'Y' = 'Y'
```

Question Number : 50 Question Type : MSQ

Correct Marks : 3

Question Label : Multiple Select Question

Consider a relation $\mathbf{R}(A, B, C, D, E)$ with the following functional dependencies:
$\mathcal{F} = \{A \rightarrow B, C \rightarrow DE, D \rightarrow E\}$

Which among the following is/are lossless decomposition(s)?

Options :

A. ✔ R1(A,B,C) and R2(C,D,E)

B. ✔ R1(A,B,C) and R2(A,C,D,E)

C. ✖ R1(A,B) and R2(B,D,E)

D. ✖ R1(A,B,C) and R2(D,E)

Question Number : 51 Question Type : MSQ

Correct Marks : 4

Question Label : Multiple Select Question

Consider a relation **hotel_information**$(c\_name, c\_id, mobile, room\_type, room\_no)$ with the following functional dependencies:

$$\mathcal{F} = \{\text{c\_id} \rightarrow (c\_name, mobile),\ (c\_name, mobile) \rightarrow room\_no,\ room\_no \rightarrow room\_type\}$$

Options :

A. ✔ The above relation can be decomposed into smaller relations, each of which is in BCNF, such that the decomposition is dependency preserving.

B. ✖ The above relation can be decomposed into smaller relations, each of which is in BCNF, such that the decomposition is not dependency preserving.

C. ✖ The above relation can be decomposed into smaller relations, each of which is in 3NF, such that the decomposition is not dependency preserving.

D. ✔ The above relation can be decomposed into smaller relations, each of which is in 3NF, such that the decomposition is dependency preserving.

Question Number : 52 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

The following numbers are inserted into an empty binary search tree in the given order: 61,34,23,45,1,2,3,4,5. What is the height of the resulting binary search tree?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Question Number : 53 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

Let $\mathrm{R}(U, V, W, X, Y, Z)$ be a given relation with the following functional dependencies:
$\mathcal{F} = \{V \to UW, W \to V, U \to Z, X \to Y\}$

Find the total number of super keys of R.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

24

Question Type : COMPREHENSION

Question Numbers : (54 to 55)

Question Label : Comprehension

Consider a relation **Employee**(*eid, ename, eaddress, pid, pname, mid, mname*).

Each employee is assigned a unique *eid*, an *ename* and an *eaddress*. Each project is assigned a unique *pid* and a *pname*. Each manager is assigned a unique *mid* and *mname*. An employee can work on more than one project and a project can have multiple employees. Each employee can work under only one manager. However, a manager can have multiple employees. A manager is not concerned with the project that the employees are working on. Different employees can have the same name and different employees can be living at the same address.

Considering the above scenario, answer the given subquestions.

Sub questions

Question Number : 54 Question Type : MSQ

Correct Marks : 3

Question Label : Multiple Select Question

Identify the candidate key(s) for the **Employee** relation.

Options :

A. ✖ *eid*

B. ✖ {*eid, mid*}

C. ✔ {*eid, pid*}

D. ✖ {*mid, pid*}

Question Number : 55 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Identify the highest normal form of the relation **Employee**.

Options :

A. ✖ 2NF

B. ✖ 3NF

C. ✖ BCNF

D. ✔ None of these

MLF

Number of Questions : 18

Section Marks : 50

Question Number : 56 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

A. ✔ Yes

B. ✖ No

Question Number : 57 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider a matrix A of size $n \times n$. Let a_{jk} denotes an element at j^{th} row and k^{th} column. The elements a_{jj} of the matrix are all of complex number i. The elements at $a_{jk} = \overline{a_{kj}}$, for $j \neq k$. Then, the matrix iA is

Options :