Question Number : 85 Question Id : 640653445523 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the dictionary **commonDict** created in the previous question. What would be the value of **commonDict['i']**?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

DBMS

Section Id :	64065328979
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065363303

Question Number : 86 Question Id : 640653445527 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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 :

6406531484502. ✔ Yes

6406531484503. ✖ No

Sub-Section Number : 2

Sub-Section Id : 64065363304

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 87 Question Id : 640653445531 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Find the correct match with respect to the normal forms shown below.

	Normal Forms
1	First Normal Form
2	Second Normal Form
3	Third Normal Form
4	Fourth Normal Form

	Properties of Normal Forms
A	To eliminate the functional dependencies in which non-prime attributes determine other non-prime attributes.
B	Does not allow multivalued attributes.
C	To eliminate multivalued dependencies.
D	To eliminate functional dependencies in which proper subsets of candidate keys determine non-prime attributes.

Options :

6406531484513. ✻ 1 - B, 2 - A, 3 - D, 4 - C

6406531484514. ✻ 1 - C, 2 - D, 3 - A, 4 - B

6406531484515. ✻ 1 - C, 2 - A, 3 - D , 4 - B

6406531484516. ✔ 1 - B, 2 - D, 3 - A , 4 - C

Question Number : 88 Question Id : 640653445535 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the URL given below:

https://student.iitm.ac.in/index.html

A: Protocol
B: Domain name
C: Resource-name

1:index.html
2:student.iitm.ac.in
3:https

Choose the correct option.

Options :

6406531484526. ✔ 1-C, 2-B, 3-A

6406531484527. ✖ 1-B, 2-C, 3-A

6406531484528. ✖ 1-C, 2-A, 3-B

6406531484529. ✖ 1-A, 2-B, 3-C

Sub-Section Number : 3

Sub-Section Id : 64065363305

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 89 Question Id : 640653445530 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the relational schema $R(A, B, C, X, U)$ with the following functional dependencies (assume that all the attributes have atomic values).

$$\mathcal{F} = \{U \to B,$$
$$XA \to C,$$
$$XA \to U,$$
$$B \to A,$$
$$XA \to A$$
$$\}$$

Check if the relation schema R is in third normal form or not. If not, which of the following functional dependency can be removed to make the relation in third normal form?

Options :

6406531484509. ✖ $U \to B$

6406531484510. ✖ $B \to A$

6406531484511. ✖ $XA \to U$

6406531484512. ✔ R is in third normal form.

Question Number : 90 Question Id : 640653445536 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

A company manufactures magnetic disks and sells them to the local markets. These magnetic disks are tested before they are sold to determine their average lifespan. While testing a set of 150 magnetic disks for 1700 hours, you observed that 35 magnetic disks lasted for 1500 hours, 70 magnetic disks lasted for 1650 hours and the remaining lasted for 1300 hours.

What will be the MTTF of 100 magnetic disks randomly selected from the set?

Options :

6406531484530. ✻ 1.5 hours

6406531484531. ✔ 15.1 hours

6406531484532. ✻ 31 hours

6406531484533. ✻ None of these

Question Number : 91 Question Id : 640653445537 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

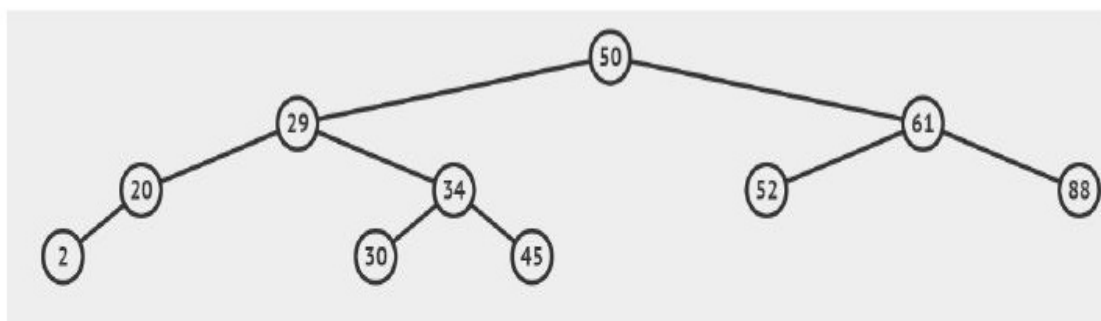Consider the Binary Search Tree shown in Figure 1.

Figure 1: Binary Search Tree (BST)

Assume that the elements 2 and 45 are removed from the given binary search tree. If the elements are removed, what is the height of the binary search tree and how many leaf nodes are there?

Options :

6406531484534. ✗ height = 3, number of leaf nodes= 3

6406531484535. ✗ height = 2, number of leaf nodes= 5

6406531484536. ✔ height = 3, number of leaf nodes= 4

6406531484537. ✗ height = 2, number of leaf nodes= 3

Sub-Section Number :	4
Sub-Section Id :	64065363306
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 92 Question Id : 640653445532 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a relation CustomerLogs(*Name, Items, Restaurant, Date*) with the following data values.

Name	Items	Restaurant	Date
Zury	Coffee	Your's cafe	19-10-21
Zury	Tea	Our's cafe	21-10-21
Zury	Tea	C	E
Zury	A	B	D

If multivalued dependency ($Name \twoheadrightarrow \{Items, Date\}$) exists in the above CustomerLogs relation, then what are the values of A, B, C, D, E?

Options :

6406531484517. ✗ A = Tea, B = Your's cafe, C = Our's cafe, D = 21-10-21, E = 19-10-21

6406531484518. ✗ A = Coffee, B = Your's cafe, C = Our's cafe, D = 21-10-21, E = 19-10-21

6406531484519. ✔ A = Coffee, B = Our's cafe, C = Your's cafe, D = 19-10-21 , E = 21-10-21

6406531484520. �֍ A = Tea, B = Our's cafe, C = Your's cafe, D = 19-10-21, E = 21-10-21

Question Number : 93 Question Id : 640653445542 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the relation $R(A, B, C, D, E, G)$ with the following sets of functional dependencies

$\mathcal{F} = \{AB \to C, AC \to B, AD \to E, B \to D, BC \to A, E \to G\}$

Let the R is decomposed in two ways:
$D1 = R1(AB), R2(BC), R3(ABDE), R4(EG)$

$D2 = R1(ABC), R2(ACDE), R3(ADG)$

Which among the following statement is correct?

Options :

6406531484545. �֍ $D1$ is a lossless decomposition and $D2$ is a lossy decomposition.

6406531484546. ✔ $D1$ is a lossy decomposition and $D2$ is a lossless decomposition.

6406531484547. ✖ $D1$ and $D2$ both are lossless decompositions.

6406531484548. ✖ $D1$ and $D2$ both are lossy decompositions.

Sub-Section Number :	5
Sub-Section Id :	64065363307
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 94 Question Id : 640653445534 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Consider the relational schema given below.
instructor($id, name, dept\_name, salary$)
Choose the SQL statement(s) that can result in an SQL Injection which retrieves all information from the **instructor** table.

Options :

6406531484522. ✖
```
SELECT *
FROM instructor
WHERE dept_name='Biology' and 1=1
```

6406531484523. ✖
```
SELECT *
FROM instructor
WHERE dept_name='Biology' and dept_name=dept_name
```

6406531484524. ✔
```
SELECT *
FROM instructor
WHERE dept_name='Biology' or 100=100
```

6406531484525. ✔
```
SELECT *
FROM instructor
WHERE dept_name='Biology' or dept_name=dept_name
```

Sub-Section Number :	6
Sub-Section Id :	64065363308
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 95 Question Id : 640653445544 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following SQL statement to create table **Customer**.

```
CREATE TABLE Customer (
    custid int NOT NULL,
    name varchar(30) NOT NULL,
    city varchar(30) NOT NULL,
    country varchar(30) NOT NULL,
    postcode varchar(20) NOT NULL,
    PRIMARY KEY (custid) )
```

Which among the following functional dependencies set will not be applicable to the table **Customer**?

Options :

6406531484553. ✔
$$\mathcal{F} = \{name \rightarrow custid,$$
$$name \rightarrow city,$$
$$city \rightarrow postcode\}$$

6406531484554. ✘
$$\mathcal{F} = \{custid \rightarrow name,$$
$$name \rightarrow city, country,$$
$$city \rightarrow postcode\}$$

6406531484555. ✔
$$\mathcal{F} = \{name \rightarrow custid,$$
$$custid, name \rightarrow city, country,$$
$$city \rightarrow postcode\}$$

6406531484556. ✘
$$\mathcal{F} = \{custid \rightarrow name,$$
$$name \rightarrow custid,$$
$$name \rightarrow city,$$
$$name \rightarrow country,$$
$$city \rightarrow postcode\}$$

Sub-Section Number : 7

Sub-Section Id : 64065363309

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 96 Question Id : 640653445528 Question Type : MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Consider a relational schema **Contacts**($aadhaarNo, name, mobileNo, address$).Assume that all the attributes have atomic values. Which of the following functional dependencies is/are example(s) of the third normal form?

Options :

6406531484504. ✔
$$\mathcal{F} = \{aadhaarNo \rightarrow (name, address),$$
$$mobileNo \rightarrow aadhaarNo,$$
$$(name, address) \rightarrow mobileNo\}$$

6406531484505. ✖
$$\mathcal{F} = \{aadhaarNo \rightarrow name,$$
$$mobileNo \rightarrow aadhaarNo,$$
$$(name, address) \rightarrow aadhaarNo\}$$

6406531484506. ✔
$$\mathcal{F} = \{(aadhaarNo, name) \rightarrow address,$$
$$mobileNo \rightarrow name,$$
$$(name, aadhaarNo) \rightarrow mobileNo\}$$

6406531484507. ✖
$$\mathcal{F} = \{(aadhaarNo, name) \rightarrow (address, mobileNo),$$
$$mobileNo \rightarrow aadhaarNo,$$
$$name \rightarrow address\}$$

Question Number : 97 Question Id : 640653445538 Question Type : MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Consider the relational schemas shown below.

movie(*m_id*, *title*, *year*, *p_id*)
producer(*p_id*, *name*, *contact*)

Assume that both the relations consists of large number of tuples. Let the following queries be executed on the two relations.

1. SELECT p.name, m.title FROM producer AS p NATURAL JOIN movie AS m
   WHERE m.year > '2002-12-31'

2. SELECT title, year FROM movie
   WHERE m_id = 'M025'

3. SELECT p.name, m.title FROM producer AS p, movie AS m
   WHERE m.p_id = p.p_id
   AND p.name = 'Yash'

Identify which of the statement(s) is/are true?

Options :

6406531484538. ✼ Query 1 and 2 will execute more efficiently when sequential file organization scheme is used.

6406531484539. ✔ Query 1 and 3 will execute more efficiently when multitable clustering file organization scheme is used.

6406531484540. ✼ Query 2 and 3 will execute more efficiently when sequential clustering file organization scheme is used.

6406531484541. ✼ Query 2 will execute more efficiently when multitable clustering file organization scheme is used.

6406531484542. ✔ Query 2 will execute more efficiently when sequential clustering file organization scheme is used.

Question Number : 98 Question Id : 640653445543 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

In the relational schema given below, the domains of all its attributes are atomic only.

R(*employee_num, employee_name, department_num, department_name*)

Suppose R satisfies the following functional dependencies:

$$\{employee\_num \rightarrow employee\_name,$$
$$department\_num \rightarrow department\_name,$$
$$employee\_num \rightarrow department\_name\}$$

If R is decomposed into:
R1(*employee_num, employee_name*) and
R2(*department_num, department_name*),
then, which among the following statement(s) is/are correct?

Options :

6406531484549. ✔ R1 and R2 are in BCNF, but decomposition is not a dependency preserving one.

6406531484550. ✔ R1 and R2 are in BCNF, but decomposition is a lossy.

6406531484551. ✖ R1 and R2 are in BCNF, but decomposition is a lossless decomposition as well as dependency preserving.

6406531484552. ✖ R1 and R2 are not in BCNF, and decomposition is neither a lossless nor dependency preserving.

Sub-Section Number :	8
Sub-Section Id :	64065363310
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 99 Question Id : 640653445529 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the relational schema car(carEngineNo, model, fuelType, company, headQuarters, aadhaar, customer, state, mobile, purchaseDate) with the following set of functional dependencies (assume that all the attributes have atomic values).

$$\mathcal{F} = \{$$
$carEngineNo \rightarrow (model, fuelType, company)$,
$(carEngineNo, aadhaar) \rightarrow purchaseDate$,
$company \rightarrow headQuarters$,
$aadhaar \rightarrow (customer, state)$,
$customer \rightarrow mobile$,
$mobile \rightarrow aadhaar$
$$\}$$

Check if the relational schema car is in BCNF or not. If car is not in BCNF, decompose into minimum X number of smaller relations, so that all the smaller relations are in BCNF as well as dependency preserving. The value of X is ―――――――

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	9
Sub-Section Id :	64065363311
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 100 Question Id : 640653445533 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider table **instructor** inside the **university** database.
The **instructor** table consists of the data as shown in Table 1

id	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000.00
12121	Wu	Finance	90000.00
15151	Mozart	Music	40000.00
32343	El Said	History	60000.00
33456	Gold	Physics	87000.00
76766	Crick	Biology	72000.00
98345	Kim	Elec. Eng.	80000.00

Table 1: **instructor**

Based on the table, what will be the output of the below Python code?

```python
import psycopg2
def connectDb(dbname, username, pwd, address, portnum):
    try:
        connection = psycopg2.connect(database = dbname,
                                      user = username,
                                      password = pwd,
                                      host = address,
                                      port = portnum)
        cursor = connection.cursor()
        query = "select count(*) from instructor where dept_name like '%o%';"
        cursor.execute(query)
        result = cursor.fetchall()[0][0]
        print(result)
        cursor.close()

    except (Exception, psycopg2.DatabaseError) as error:
        print(error)
    finally:
        connection.close()
connectDb("university", "postgres", "root", "127.0.0.1", "5432")
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Sub-Section Number :   10

Sub-Section Id :   64065363312

Question Shuffling Allowed :   No

Is Section Default? :   null

Question Id : 640653445539 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (101 to 102)

Question Label : Comprehension

Consider the relation $\mathbf{R}(A, B, C, D, E)$ with the following sets of functional dependencies.

$\mathcal{F}_1 = \{A \rightarrow B, BC \rightarrow D, E \rightarrow A\}$
$\mathcal{F}_2 = \{B \rightarrow C, AB \rightarrow D, E \rightarrow AB, C \rightarrow E\}$
$\mathcal{F}_3 = \{A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow E, E \rightarrow A\}$

Based on the above data and answer the given subquestions.

Sub questions

Question Number : 101 Question Id : 640653445540 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Let m be the number of candidate keys for $\mathbf{R}$ based on $\mathcal{F}_1$, n be the number of candidate keys for $\mathbf{R}$ based on $\mathcal{F}_2$ and p be the number of candidate keys for $\mathbf{R}$ based on $\mathcal{F}_3$. Find out the value of $m + n + p$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Possible Answers :

9

Question Number : 102 Question Id : 640653445541 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Let m be the maximum number of super keys for **R** based on $\mathcal{F}_1$, n be the maximum number of super keys for **R** based on $\mathcal{F}_2$ and p be the maximum number of super keys for **R** based on $\mathcal{F}_3$.

Find out the value of $m + n + p$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

67

PDSA

Section Id :	64065328980
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16