

maximum

6406531736671. ✖ List of items for which the difference between the highest and lowest price is minimum

6406531736672. ✖ List of items with same price in all shops

## DBMS

|  |             |
|--|-------------|
| Section Id :   | 64065333932 |
| Section Number :   | 4           |
| 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 :   | 64065373922 |
| Question Shuffling Allowed :                                 | No          |
| Is Section Default? :  | null        |

Question Number : 49 Question Id : 640653521037 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 :

6406531736673.  YES

6406531736674.  NO

Sub-Section Number : 2

Sub-Section Id : 64065373923

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 50 Question Id : 640653521038 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 the table `instructor` in the `university` database as shown in Table 1.

| id    | name       | dept_name  | salary |
|-------|------------|------------|--------|
| 10101 | Srinivasan | Comp. Sci. | 65000  |
| 12121 | Wu         | Finance    | 90000  |
| 15151 | Mozart     | Music      | 40000  |
| 32343 | El Said    | History    | 60000  |
| 33456 | Gold       | Physics    | 87000  |
| 76766 | Crick      | Biology    | 72000  |
| 98345 | Kim        | Elec. Eng. | 80000  |

Table 1: `instructor`

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

```
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 salary from instructor
        where dept_name like '%y%' order by salary DESC;'''
        cursor.execute(query)
        result = cursor.fetchmany(1)
        for row in result:
            sal=row[0]
            print(sal)

        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 :**

87000

**Question Number : 51 Question Id : 640653521042 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 a complete binary search tree that consists of 31 elements. What is the minimum height of the given binary search tree?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

4

**Sub-Section Number :** 3

**Sub-Section Id :** 64065373924

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653521039 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 : (52 to 53)**

Question Label : Comprehension

Consider a magnetic disk with 32 platters, 2 surfaces/platter, 4096 tracks/surface, 1024 sectors/track, and 1024 bytes/sector.

The disk rotates with 2000 revolutions per minute.

Based on the above data, answer the given subquestions.

## Sub questions

**Question Number : 52 Question Id : 640653521040 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

What is the minimum number of bits required for addressing all the tracks?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

18

**Question Number : 53 Question Id : 640653521041 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

Given that the rotational speed of the disk is 2000 revolutions per minute and the seek time is 5ms, what will be the disk access time?

*Consider disk access time= seek time + rotational latency.*

**Options :**

6406531736677. ✖ 20 sec

6406531736678. ✖ 35 ms

6406531736679. ✔ 20 ms

6406531736680. ✖ 35 sec

**Sub-Section Number :**

4

**Sub-Section Id :**

64065373925

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 54 Question Id : 640653521045 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 a relation schema `student_info(roll_no, name, subject, marks)` with `(roll_no, name)` as candidate key. Which among the following functional dependencies violates the Third Normal Form (3NF)?

Options :

6406531736687. ✖ `roll_no, name → marks`

6406531736688. ✖ `roll_no, name → subject`

6406531736689. ✖ `roll_no → name`

6406531736690. ✔ `subject → marks`

Sub-Section Number : 5

Sub-Section Id : 64065373926

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 55 Question Id : 640653521043 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

Consider the tree as shown in Figure 1.

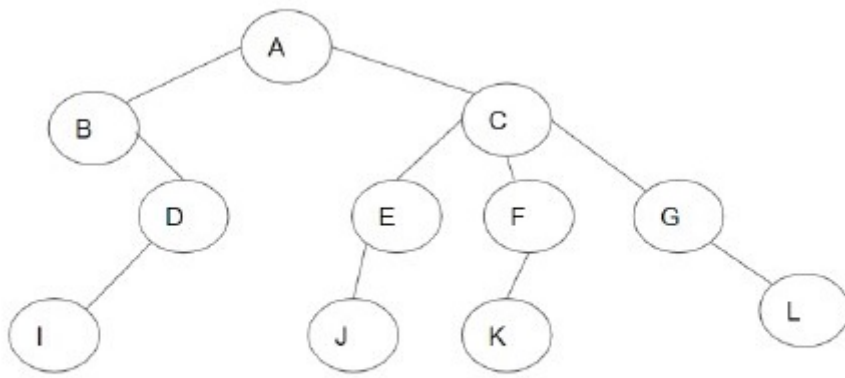


Figure 1: Tree

What is the arity of the given tree?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

3

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 6           |
| <b>Sub-Section Id :</b>             | 64065373927 |
| <b>Question Shuffling Allowed :</b> | Yes         |
| <b>Is Section Default? :</b>        | null        |

**Question Number : 56 Question Id : 640653521044 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 relational schema  $R(A, B, C, D)$  with the following set of functional dependencies

$$\mathcal{F} = \{A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow A\}$$

If  $R$  is decomposed into  $R_1(A, B)$ ,  $R_2(B, C)$  and  $R_3(C, D)$ , then which of the following options is true?

**Options :**

6406531736683. ✖ Not lossless decomposition but dependency preserving
6406531736684. ✖ A lossless decomposition but not dependency preserving
6406531736685. ✖ Neither a lossless decomposition nor a dependency preserving one
6406531736686. ✔ A lossless decomposition as well as a dependency preserving one

**Question Number : 57 Question Id : 640653521046 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 relational schema  $R(U, V, W, X, Y, Z)$  where the domain of every attribute consists of atomic values. The set of functional dependencies for the relation  $R$  is given as follows:

$$\mathcal{F} = \{UV \rightarrow W, W \rightarrow X, X \rightarrow VY, Y \rightarrow Z, Z \rightarrow U\}$$

What is the highest normal form of the given relation  $R$ ?

**Options :**

6406531736691. ✖ 1NF
6406531736692. ✖ 2NF
6406531736693. ✔ 3NF
6406531736694. ✖ BCNF

**Question Number : 58 Question Id : 640653521048 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 relational schema **movie**(*m\_id*, *title*, *year*, *producer\_id*, *producer\_name*, *director\_id*, *rating*) with the following set of functional dependencies.

$$\mathcal{F} = \{$$

*m\_id* → *title*,  
*title* → *producer\_id*, *producer\_name*,  
*producer\_id* → *producer\_name*,  
*m\_id* → *producer\_id*, *director\_id*,  
*m\_id*, *title* → *rating*, *year*  
}

Identify the number of candidate keys along with the total number of super keys for the above relation **movie**.

**Options :**

6406531736699. ✖ candidate keys = 2, super keys = 32

6406531736700. ✖ candidate keys = 1, super keys = 2

6406531736701. ✔ candidate keys = 1, super keys = 64

6406531736702. ✖ candidate keys = 2, super keys = 16

**Question Number : 59 Question Id : 640653521050 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 relational schema **Customer** ( *c\_id*, *purchased\_item*, *store\_id*, *store\_name* ).

A customer can purchase multiple items and from multiple stores. However, *store\_id* determines the *store\_name*, i.e., *store\_id* → *store\_name*.

Identify the most appropriate 4NF decomposition of the given schema.

**Options :**

6406531736707. ✖ R1(*c\_id*, *store\_id*), R2(*c\_id*, *purchased\_item*, *store\_name*).

6406531736708. ✖ R1(*store\_id*, *store\_name*), R2(*c\_id*, *purchased\_item*).

6406531736709. ✔ R1(*store\_id*, *store\_name*), R2(*c\_id*, *store\_id*), and R3(*c\_id*, *purchased\_item*).

6406531736710. ✖ R1(*store\_id*, *store\_name*), R2(*store\_id*, *c\_id*, *purchased\_item*).

Question Number : 60 Question Id : 640653521053 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 following instance of the relational schema **R** given in Figure 2.

| A | B | C | D | E |
|---|---|---|---|---|
| 2 | 5 | 3 | 4 | 6 |
| 6 | 7 | 2 | 4 | c |
| a | 7 | 3 | 4 | 7 |
| b | 5 | 2 | 4 | d |

Figure 2: An instance of relation **R**

Identify the correct values of a, b, c and d such that  $B \rightarrow E$  and  $D \twoheadrightarrow AC$  holds true.

Options :

6406531736720. ✖ a=6, b=2, c=6, d=7

6406531736721. ✖ a=7, b=6, c=7, d=6

6406531736722. ✖ a=4, b=7, c=6, d=7

6406531736723. ✔ a=2, b=6, c=7, d=6

Sub-Section Number : 7

Sub-Section Id : 64065373928

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 61 Question Id : 640653521047 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 relational schema  $R(A, B, C, D, E, F)$  with the following sets of functional dependencies:

$X = \{BC \rightarrow D, D \rightarrow E, AF \rightarrow BE, E \rightarrow CF\}$

$Y = \{C \rightarrow BE, D \rightarrow A, AF \rightarrow BC, E \rightarrow BF\}$

Which among the following statements is/are incorrect?

**Options :**

6406531736695. ✓ X covers Y

6406531736696. ✗ Y doesn't cover X

6406531736697. ✓ Y covers X

6406531736698. ✗ Neither X covers Y nor Y covers X

**Sub-Section Number :** 8

**Sub-Section Id :** 64065373929

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 62 Question Id : 640653521049 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 relational schema **Contacts**(*name, age, aadhar\_no, address, mobile\_no*) with the multivalued dependency ( $aadhar\_no \twoheadrightarrow name, address$ ). Identify the correct rule from the following options (which can be applied once), such that ( $aadhar\_no \twoheadrightarrow age, mobile\_no$ ) holds.

**Options :**

6406531736703. ✗ Augmentation

6406531736704. ✗ Transitivity

6406531736705. ✗ Replication

6406531736706. ✓ Complementation

**Question Number : 63 Question Id : 640653521051 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

Which of the following Flask functions serves as a decorator for telling the application which URL should be used to call the associated function?

**Options :**

6406531736711. ✓ route()

6406531736712. ✗ run()

6406531736713. ✗ cursor()

6406531736714. ✗ connect()

**Question Number : 64 Question Id : 640653521054 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 relation **Student** as shown in Figure 3.

| name   | department       | roll_no |
|--------|------------------|---------|
| Ashna  | Civil Engg.      | CE001   |
| Surbhi | Comp. Sci.       | CS780   |
| Nil    | Mechanical Engg. | ME312   |
| Komal  | Civil Engg.      | CE112   |
| Madhur | Comp. Sci.       | CS458   |
| Ramesh | Comp. Sci.       | CS321   |

Figure 3: Student relation

Choose the correct updated relation **Student**, when the following query is executed.

```
DELETE FROM Student
WHERE department = 'Civil Engg.' OR 1 = 1
```

**Options :**

Output:

| name   | department       | roll_no |
|--------|------------------|---------|
| Ashna  | Civil Engg.      | CE001   |
| Surbhi | Comp. Sci.       | CS780   |
| Nil    | Mechanical Engg. | ME312   |
| Komal  | Civil Engg.      | CE112   |
| Madhur | Comp. Sci.       | CS458   |
| Ramesh | Comp. Sci.       | CS321   |

6406531736724. ✖

Output:

| name   | department       | roll_no |
|--------|------------------|---------|
| Surbhi | Comp. Sci.       | CS780   |
| Nil    | Mechanical Engg. | ME312   |
| Madhur | Comp. Sci.       | CS458   |
| Ramesh | Comp. Sci.       | CS321   |

6406531736725. ✖

Output:

| name | department | roll_no |
|------|------------|---------|
|      |            |         |

6406531736726. ✓

Output:

| name  | department  | roll_no |
|-------|-------------|---------|
| Ashna | Civil Engg. | CE001   |
| Komal | Civil Engg. | CE112   |

6406531736727. ✖

**Sub-Section Number :** 9  
**Sub-Section Id :** 64065373930  
**Question Shuffling Allowed :** Yes  
**Is Section Default? :** null

**Question Number : 65 Question Id : 640653521052 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  $R(P, Q, R, S, T, U, V)$  with the following set of functional dependencies:

$$F = \{T \rightarrow V, PR \rightarrow V, PQSU \rightarrow RT, RST \rightarrow U, Q \rightarrow S, PSUV \rightarrow TQ\}.$$

From the following options, identify the extraneous attribute(s) according to the given set of functional dependencies.

**Options :**

6406531736715. ✖ Q in  $PQSU \rightarrow RT$

6406531736716. ✓ T in  $PSUV \rightarrow TQ$

6406531736717. ✖ R in  $RST \rightarrow U$

6406531736718. ✓ S in  $PQSU \rightarrow RT$

## PDSA

|  |             |
|--|-------------|
| Section Id :   | 64065333933 |
| 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 :   | 64065373931 |
| Question Shuffling Allowed :                                 | No          |
| Is Section Default? :  | null        |

Question Number : 66 Question Id : 640653521055 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 : PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON"**

**ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?**