Question Label : Short Answer Question

Using Central limit theorem, find the approximate probability that there are more than 53 errors in a certain data file. Enter the answer correct to two decimal places.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

0.30 to 0.36

# DBMS

| | |
|---|---|
| **Section Id :** | 64065348504 |
| **Section Number :** | 6 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 13 |
| **Number of Questions to be attempted :** | 13 |
| **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 :** | 640653100817 |
| **Question Shuffling Allowed :** | No |
| **Is Section Default? :** | null |

**Question Number : 80 Question Id : 640653689489 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 (COMPUTER BASED EXAM)"**

**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 :**

6406532306546. ✔ YES

6406532306547. ✖ NO

| | |
|---|---|
| **Sub-Section Number :** | 2 |
| **Sub-Section Id :** | 640653100818 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 81 Question Id : 640653689493 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider the following table:

| PlayerID | PlayerName | Team | Runs |
|---|---|---|---|
| 001 | Virat | India | 100 |
| 002 | Rohit | India | 100 |
| 003 | Smith | Australia | 70 |
| 004 | Jason | England | 60 |
| 005 | Rohit | Bangladesh | 65 |
| 006 | Asif | Pakistan | 50 |
| 007 | Smith | Newzealand | 70 |

Table 1: **Players**

Which of the following functional dependencies hold in the **Players** table? [MSQ]

**Options :**

6406532306556. ✔ $PlayerID \rightarrow PlayerName$

6406532306557. ✖ $PlayerName \rightarrow Runs$

6406532306558. ✖ $PlayerName \rightarrow Team$

6406532306559. ✖ $Runs \rightarrow PlayerID$

**Sub-Section Number :** 3

**Sub-Section Id :** 640653100819

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 82 Question Id : 640653689494 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 $\mathbf{R}(A,B,C,D,E,F,G,H)$, where each attribute is atomic and the following functional dependencies hold:
$\mathcal{F}=\{AB \rightarrow CDE, D \rightarrow F, F \rightarrow GH, E \rightarrow AB\}$
The highest normal form for this relation is _____

**Options :**

6406532306560. ✔ 2 NF

6406532306561. ✖ 1 NF

6406532306562. ✖ 3 NF

6406532306563. ✖ BCNF

**Question Number : 83 Question Id : 640653689500 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 magnetic disk with 4 platters, 2 surfaces per platter, 1024 tracks per surface, and 2048 sectors per track, with a disk capacity of 8 GB. Find the capacity of one sector.

**Options :**

6406532306574. ✖ 2048 bytes per sector

6406532306575. ✖ 1024 bytes per sector

6406532306576. ✔ 512 bytes per sector

6406532306577. ✖ 256 bytes per sector

**Question Number : 84 Question Id : 640653689502 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 table **profile** shown in table 3:

| Name | Salary |
|---|---|
| Data Engg | 55000 |
| Data Sci. | 75000 |
| Data Arch. | 75000 |
| App Dev | 40000 |
| JAVA Dev | 30000 |
| Programmer | 60000 |

Table 3: **profile**

Choose the correct output table when the following query is executed.

```
UPDATE profile
SET salary = salary + 5000
WHERE name LIKE 'Data%' or 'App Dev' = 'App Dev'
```

**Options :**

6406532306582. ✖

| Name | Salary |
|---|---|
| Data Engg | 55000 |
| Data Sci. | 75000 |
| Data Arch. | 75000 |
| App Dev | 45000 |
| JAVA Dev | 30000 |
| Programmer | 60000 |

6406532306583. ✖

| Name | Salary |
|---|---|
| Data Engg | 55000 |
| Data Sci. | 75000 |
| Data Arch. | 75000 |
| App Dev | 40000 |
| JAVA Dev | 30000 |
| Programmer | 60000 |

6406532306584. ✔

| Name | Salary |
|---|---|
| Data Engg | 60000 |
| Data Sci. | 80000 |
| Data Arch. | 80000 |
| App Dev | 45000 |
| JAVA Dev | 35000 |
| Programmer | 65000 |

| Name | Salary |
|---|---|
| Data Engg | 60000 |
| Data Sci. | 80000 |
| Data Arch. | 80000 |
| App Dev | 45000 |
| JAVA Dev | 30000 |
| Programmer | 60000 |

6406532306585. ✖

**Sub-Section Number :** 4

**Sub-Section Id :** 640653100820

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 85 Question Id : 640653689501 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 table **instructor** in the **university** database as shown in Table 2.

| id | name | dept_name | salary |
|---|---|---|---|
| 10101 | Srinivasan | Comp. Sci. | 60000 |
| 12121 | Wu | Finance | 70000 |
| 15151 | Mozart | Music | 60000 |
| 32343 | El Said | History | 50000 |
| 33456 | Gold | Physics | 47000 |
| 76766 | Crick | Biology | 32000 |
| 98345 | Kim | Elec. Eng. | 20000 |

Table 2: **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 id FROM instructor a WHERE
        (SELECT COUNT(salary) FROM instructor b WHERE
        b.salary>a.salary) < 2'''
        cursor.execute(query)
        result = cursor.fetchall()
        for row in result:
            d=row[0]
            print(d)

        cursor.close()

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

**Options :**

6406532306578. ✔

| 10101 |
|---|
| 12121 |
| 15151 |

6406532306579. ✖

| 76766 |
| --- |
| 98345 |

6406532306580. ✖

| 10101 |
| --- |
| 12121 |

6406532306581. ✖ None of these

**Question Number : 86 Question Id : 640653689506 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

The G20 is a global forum that brings together the world's major economies to discuss and cooperate on international economic and financial issues. The organizers of the G20 event have designed a database to store information about the participants, their countries, and the issues discussed.

The original database is

**G20Participants** (*Participant_ID, Participant_Name, Participant_Email, Participant_Country,Country_Leader_Name,Country_GDP, Issue_Discussed*)

The functional dependencies are:

F = {*Participant_ID* → Participant_Name, Participant_Email

*Participant_Country* → Country_Leader_Name,Country_GDP

*Participant_ID* → Participant_Country}

The initial design of the database is as follows:

Table 1:

**Participants** (*Participant_ID, Participant_Name, Participant_Email*)

Table 2:

**Country** (*Participant_Country,Country_Leader_Name,Country_GDP, Issue_Discussed*)

The database designers have identified that this design violates the third normal form (3NF) of database normalization.

Which of the following changes would bring the database design into 3NF?

**Options :**

6406532306594. ✖ Split the **Country** table into two tables, one for the issue discussed and merge with **Participants**.

6406532306595. ✖ Remove *Issue_Discussed* and add *Participant_ID* in **Country** table. And create a new table for the issues discussed and link it to the **Participants**.

6406532306596. ✖ Remove *Issue_Discussed* from **Country** and create a new table for the issues discussed and link it to the **Participants** tables using a foreign key.

6406532306597. ✔ Remove *Issue_Discussed* from **Country** and create a new table for the issues discussed and link it to the **Participants** and **Country** tables using a foreign key.

| | |
|---|---|
| **Sub-Section Number :** | 5 |
| **Sub-Section Id :** | 640653100821 |
| **Question Shuffling Allowed :** | Yes |
| **Is Section Default? :** | null |

**Question Number : 87 Question Id : 640653689507 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider the relation **players**(Name, Team, Coach, Runs) with the data:

| Name | Team | Coach | Runs |
|---|---|---|---|
| Sharma | CSK | Steven | 99 |
| Sharma | MI | Mahela | 50 |
| Sharma | MI | Mahela | 99 |
| Sharma | CSK | Steven | 50 |
| Kumar | CSK | Steven | 49 |
| Kumar | MI | Mahela | 100 |
| Kumar | MI | Mahela | 49 |
| Kumar | CSK | Steven | 100 |

Table 4: **players**

Check whether the relation **players** is in 4NF or not. If not, then decomposed it into 4NF.
Choose the correct option.

**Options :**

6406532306598. ✖ The relation **players** is in 4NF.

| Name | Runs |
|---|---|
| Sharma | 99 |
| Sharma | 50 |
| Kumar | 49 |
| Kumar | 100 |

Table 5: **players1**

| Name | Team | Coach |
|---|---|---|
| Sharma | CSK | Steven |
| Sharma | MI | Mahela |
| Kumar | CSK | Steven |
| Kumar | MI | Mahela |

Table 6: **players2**

6406532306599. ✔

| Name | Team | Runs |
|---|---|---|
| Sharma | CSK | 99 |
| Sharma | MI | 50 |
| Kumar | CSK | 49 |
| Kumar | MI | 100 |

Table 7: **players1**

| Team | Coach |
|---|---|
| CSK | Steven |
| MI | Mahela |

Table 8: **players2**

6406532306600. ✖

6406532306601. ✖

| Name | Team | Runs |
|---|---|---|
| Sharma | CSK | 99 |
| Sharma | MI | 50 |
| Kumar | CSK | 49 |
| Kumar | MI | 100 |

Table 9: players1

| Name | Coach | Runs |
|---|---|---|
| Sharma | Steven | 99 |
| Sharma | Mahela | 50 |
| Kumar | Steven | 49 |
| Kumar | Mahela | 100 |

Table 10: players2

**Sub-Section Number :** 6

**Sub-Section Id :** 640653100822

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653689490 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 : (88 to 89)**

Question Label : Comprehension

Consider the relation schema and the set of functional dependencies, and answer the sub questions.

$$\mathbf{R}(A, B, C, D, E, F, G)$$
$$\mathcal{F} = \{A \rightarrow B, C \rightarrow E, D \rightarrow EF, B \rightarrow D, F \rightarrow G\}$$

**Sub questions**

**Question Number : 88 Question Id : 640653689491 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

What is the total number of superkeys present in relation **R**?

**Options :**

6406532306548. ✖ 31

6406532306549. ✔ 32

6406532306550. ✖ 29

6406532306551. ✖ 33

**Question Number : 89 Question Id : 640653689492 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider the relation **R** to be decomposed into the following decompositions:

$D_1$=$(A,B)$, $(A,C,D,E)$, $(E,F,G)$
$D_2$=$(A,B,C,D,E)$, $(D,E,F)$, $(F,G)$

Choose the correct option(s).

**Options :**

6406532306552. ✖ $D_1$ is lossy but dependency preserving

6406532306553. ✖ $D_2$ is lossless but not dependency preserving

6406532306554. ✔ $D_1$ is lossy but not dependency preserving

6406532306555. ✔ $D_2$ is lossless but dependency preserving

**Question Id : 640653689495 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 : (90 to 91)**

Question Label : Comprehension

The Indian Space Research Organization (ISRO) has decided to maintain a database of all the employees and projects that come under the Chandrayaan mission. Below is the original database structure designed by ISRO:

**Chandrayaan**$(Emp\_ID, Scientist\_Name, Technician\_Name, Project\_ID, Project\_Name, Budget)$

The functional dependencies applicable to **Chandrayaan** are:

$$F = \{Emp\_ID \rightarrow Scientist\_Name, Technician\_Name,$$
$$Project\_ID \rightarrow Project\_Name,$$
$$Project\_Name \rightarrow Budget\}$$

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 90 Question Id : 640653689496 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

The current table is in which normal form?

**Options :**

6406532306564. ✔ 1 NF

6406532306565. ✖ 2 NF

6406532306566. ✖ 3 NF

6406532306567. ✖ BCNF

**Question Number : 91 Question Id : 640653689497 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

Which of the following decompositions will help to achieve BCNF?

**Options :**

6406532306568. ✔ Table 1: **Scientists** $(Emp\_ID, Scientist\_Name)$
Table 2: **Technicians** $(Emp\_ID, Technician\_Name)$
Table 3: **Projects** $(Project\_ID, Project\_Name)$
Table 4: **Finances** $(Project\_Name, Budget)$

6406532306569. ✖ Table 1: **Scientists** $(Emp\_ID, Scientist\_Name, Project\_ID)$
Table 2: **Technicians** $(Emp\_ID, Technician\_Name)$
Table 3: **Projects** $(Project\_ID, Project\_Name, Budget)$

6406532306570. ✖ Table 1: **Scientists** $(Emp\_ID, Scientist\_Name)$
Table 2: **Technicians** $(Emp\_ID, Technician\_Name, Project\_Name, Budget)$
Table 3: **Projects** $(Project\_ID, Project\_Name)$

6406532306571. ✖ Table 1: **Scientists** $(Emp\_ID, Scientist\_Name)$
Table 2: **Technicians** $(Emp\_ID, Technician\_Name)$
Table 3: **Projects** $(Project\_ID, Project\_Name, Budget)$
Table 4: **Finances** $(Project\_Name, Budget)$

| | |
|---|---|
| **Sub-Section Number :** | 7 |
| **Sub-Section Id :** | 640653100823 |
| **Question Shuffling Allowed :** | No |
| **Is Section Default? :** | null |

**Question Id : 640653689503 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 : (92 to 93)**

Question Label : Comprehension

Consider the relation $\mathbf{CAR}(LicenseNo,\ EngineSerialNo,\ Model,\ Year)$ and the following functional dependencies set

$$\mathcal{F} = \{LicenseNo, EngineSerialNo \rightarrow Model,$$
$$EngineSerialNo \rightarrow Year$$
$$Model, Year \rightarrow EngineSerialNo\}$$

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 92 Question Id : 640653689504 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 3 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following is/are candidate keys for relation **CAR**?

**Options :**

6406532306586. ✔ (LicenseNo, EngineSerialNo)

6406532306587. ✖ (LicenseNo, EngineSerialNo, Year)

6406532306588. ✔ (LicenseNo, Model, Year)

6406532306589. ✖ (LicenseNo)

**Question Number : 93 Question Id : 640653689505 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

If the relation **CAR** is decomposed into two relations **C1** and **C2**, which of the following is a lossless join decomposition?

**Options :**

6406532306590. ✖ **C1**(*LicenseNo, EngineSerialNo, Model* ), **C2**(*Model, Year*)

6406532306591. ✔ **C1**(*LicenseNo, EngineSerialNo, Model* ), **C2**(*EngineSerialNo, Year*)

6406532306592. ✖ **C1**(*LicenseNo, EngineSerialNo*), **C2**(*Model, Year*)

6406532306593. ✖ **C1**(*LicenseNo, EngineSerialNo, Year*), **C2**(*LicenseNo, Year*)

**Sub-Section Number :** 8

**Sub-Section Id :** 640653100824

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 94 Question Id : 640653689498 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 a string of pending block references in the order given: 4, 6, 4, 1, 3, 2, 4, 1, 4, 2. The system has a buffer with 4 slots. Assume that initially, the buffer is empty. If LRU buffer replacement policy is used, then what will be the value of the following expression?

Number of misses − Number of hits

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0

**Sub-Section Number :** 9

**Sub-Section Id :** 640653100825

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 95 Question Id : 640653689499 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 binary search tree consisting of 15 elements. Let *m* be the maximum height possible for a given binary search tree, and *n* be the minimum height possible for a given binary search tree.

What will be the value of $m - n$ ?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

11

# PDSA

| | |
|---|---|
| **Section Id :** | 64065348505 |
| **Section Number :** | 7 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 17 |
| **Number of Questions to be attempted :** | 17 |
| **Section Marks :** | 50 |
| **Display Number Panel :** | Yes |
| **Group All Questions :** | No |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |