Correct Marks : 3

Question Label : Short Answer Question

Using the Central Limit Theorem, find the approximate probability that in a random sample of 300 selected children at least 30 will have defective eye-sight. Enter the answer correct to 1 decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

DBMS

Section Id :	64065339669
Section Number :	8
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 :	64065384010
Question Shuffling Allowed :	No

Is Section Default? : null

Question Number : 148 Question Id : 640653586160 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 :

6406531956200. ✔ YES

6406531956201. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384011

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 149 Question Id : 640653586161 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 Reserve Bank of India (RBI) maintains a database of financial transactions carried out by various banks across the country. The database contains transaction records of varying magnitudes. The RBI decides to normalize the database to eliminate data redundancy and improve data integrity.

Original database structure:

Transaction$(Transaction\_ID, Bank\_Name, Bank\_Location, Amount, Date)$

The functional dependencies applicable to **Transaction** are:
$F = \{Bank\_Name \rightarrow Bank\_Location,$
$Transaction\_ID \rightarrow Amount, Date\}$

Normalized database structure:

Table 1: **Bank** $(Bank\_Name, Bank\_Location)$

Table 2: **Transaction** $(Transaction\_ID, Bank\_Name, Amount, Date)$

Which of the following normal forms has the RBI achieved by the new normalized database structure?

Options :

6406531956202. ✔ 1NF

6406531956203. ✖ 2NF

6406531956204. ✖ 3NF

6406531956205. ✖ BCNF

Question Number : 150 Question Id : 640653586162 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*}

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 :

6406531956206. ✔ 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.

6406531956207. ✖ Create a new table for the issues discussed and link it to the **Participants** and **Country** tables using a foreign key.

6406531956208. ✖ Split the **Country** table into two tables, one for the issue discusses and the other for their respective countries.

6406531956209. ✖ 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**.

Question Number : 151 Question Id : 640653586167 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 $\mathbf{R}(J, K, L, M, N)$
and the set of functional dependencies
$\mathcal{F} = \{$
$J \rightarrow K,$
$JK \rightarrow L,$
$M \rightarrow LJ,$
$MN \rightarrow JK$
$\}$
Which of the following functional dependency sets is
equivalent to the given set of functional dependencies?

Options :

6406531956223. ✖ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow K, N \rightarrow K\}$

6406531956224. ✖ $\mathcal{F} = \{J \rightarrow L, M \rightarrow J, M \rightarrow K\}$

6406531956225. ✖ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow K, MN \rightarrow K\}$

6406531956226. ✔ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow J, MN \rightarrow K\}$

Question Number : 152 Question Id : 640653586170 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 $\mathbf{Z} = (P, Q, R, S, T, U, V, W, X)$ and has the set of functional dependencies $\mathrm{F} = \{ PQ \rightarrow R, P \rightarrow ST, U \rightarrow VW, Q \rightarrow U, S \rightarrow X \}$.

The relation **Z** is decomposed into three relations Z_1, Z_2, and Z_3 as

$Z_1 = \{ P,Q,R,S,T \}$

$Z_2 = \{ Q,U,V,W \}$

$Z_3 = \{ S, X \}$

This decomposition of Z is :

Options :

6406531956235. ✔ Lossless and dependency preserving

6406531956236. ✖ Lossless and not dependency preserving

6406531956237. ✖ Lossy and dependency preserving

6406531956238. ✖ Lossy and not dependency preserving

Question Number : 153 Question Id : 640653586175 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 disk having 16 platters, 2 surfaces per platter, 16 tracks per surface, 2048 sectors per track and 512 bytes/sector. Let A denote the minimum number of bits required to access a sector, B denote the number of cylinders required in the disk and C denote the storage capacity of the disk. Find the appropriate triplet for <A, B, C>.

Options :

6406531956252. ✖ <20, 20, 512 MB>

6406531956253. ✖ <16, 20, 512 GB >

6406531956254. ✖ <20, 16, 512 GB>

6406531956255. ✔ <20, 16, 512 MB>

Sub-Section Number : 3

Sub-Section Id : 64065384012

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 154 Question Id : 640653586164 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

Which of the following statements is/are true regarding temporal relations?

Options :

6406531956214. ✖ A uni-temporal relation can have only valid time.

6406531956215. ✖ A uni-temporal relation can have only transaction time.

6406531956216. ✔ A uni-temporal relation can have either valid transaction time or transaction time.

6406531956217. ✔ A bi-temporal relation can have both valid transaction time and transaction time.

Question Number : 155 Question Id : 640653586173 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

Which of the following are correct about a linked list ?

Options :

6406531956244. ✖ Stores data in contiguous memory location always

6406531956245. ✔ Each node contains a *link* to another node

6406531956246. ✖ Allows random access using its index which is fast

6406531956247. ✔ Flexible in size

Sub-Section Number : 4

Sub-Section Id : 64065384013

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 156 Question Id : 640653586165 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

In Python Postgres database connectivity, the 'cursor.fetchmany()' method is used to retrieve data from a table. The method 'cursor.fetchmany()' returns-

Options :

6406531956218. ✖ A dictionary

6406531956219. ✖ A tuple

6406531956220. ✔ List of tuple

6406531956221. ✖ List of dictionary

Sub-Section Number : 5

Sub-Section Id : 64065384014

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 157 Question Id : 640653586166 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 an instance of **student** Table in the **school_management** database.

roll_no	name	marks
1	Ram	50
2	Rakesh	65
3	Lily	45
4	Pranav	89
5	Emily	99

Table 1: **student**

After executing the Python code below, it is observed that the new tuple didn't get updated in the table. Check the code and find out the possible error and write it down. Note: Write the code in lowercase and without space. Just mention the command that is missing

```
import psycopg2
def insertrecord(roll,name,marks):
    conn=None
    try:
        conn=psycopg2.connect(database="school_management",
                              user="postgres",
                              password="root",
                              host="127.0.0.1",
                              port="5432")
        cur=conn.cursor() # create a new cursor
        cur.execute(''' insert into student
        values(%s,%s,%s)''',(roll,name,marks))
        #write down the code here
        cur.close()
    except(Exception, psycopg2.DatabaseError) as error:
        print(error)
    finally:
        if conn is not None:
            conn.close()
insertrecord(6,"Pranav",89)
```

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : Yes

Text Areas : PlainText

Possible Answers :

conn.commit()

Sub-Section Number : 6

Sub-Section Id : 64065384015

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 158 Question Id : 640653586168 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

Consider a relation **students**$(name, age, marks, house\_name)$. If all students have the same age, no two students have the same marks and two or more students have the same name, then which of the following functional dependency/dependencies hold(s) in the **students** relation?

Options :

6406531956227. ✔ $name \rightarrow age$

6406531956228. ✖ $name \rightarrow marks$

6406531956229. ✔ $marks \rightarrow name$

6406531956230. ✖ $name \rightarrow house\_name$

Sub-Section Number : 7

Sub-Section Id : 64065384016

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 159 Question Id : 640653586169 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 $R(A,B,C,D,E,F,G,H,I)$ and the set of functional dependencies $F' = \{ A \rightarrow B, AB \rightarrow CD, F \rightarrow GH, AB \rightarrow E \}$ holds on R.
Which of the following are valid and can be logically implied by F' ?

1. $A \rightarrow A$
2. $A \rightarrow BCD$
3. $B \rightarrow C$
4. $AB \rightarrow CDE$
5. $IF \rightarrow IG$
6. $F \rightarrow GI$

Options :

6406531956231. ✖ Only 1 and 6 are valid

6406531956232. ✖ Only 2, 3, 5, and 6 are valid

6406531956233. ✔ Only 1, 2, 4, and 5 are valid

6406531956234. ✖ 1 to 6 all are valid

Question Number : 160 Question Id : 640653586172 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 following numbers are inserted into an empty binary search tree in the given order.

76, 86, 42, 112, 120, 21, 78, 38, 45, 80, 77, 79

Let X, Y denote the number of nodes in the left and right sub tree of node 86 respectively.
Find the value of $|X - Y|$.

Options :

6406531956240. ✔ 2

6406531956241. ✖ 3

6406531956242. ✖ 4

6406531956243. ✖ 5

Sub-Section Number : 8

Sub-Section Id : 64065384017

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 161 Question Id : 640653586171 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 sequence of pending block references in the given order:

4, 3, 1, 4, 7, 7, 1, 4, 5, 2, 3, 4, 7, 4, 2, 4, 1, 4, 2, 5

The system has a buffer with 4 slots. Assume that initially, the buffer is empty. If the Least Recently Used (LRU) buffer replacement policy is used, then how many misses/page fault will occur while referencing all the requested blocks ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Sub-Section Number : 9

Sub-Section Id : 64065384018

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 162 Question Id : 640653586163 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 a relation $\mathrm{R}(A, B, C, D, E)$ with the following multivalued dependencies (MVD):
$A \twoheadrightarrow B$
$B \twoheadrightarrow D$
Suppose relation R contains the tuples (0, 1, 2, 3, 4) and (0, 5, 6, 7, 8). Which of the following tuple(s) must also be in R such that given MVD satisfied?

Options :

6406531956210. ✖ (0,1,2,7,8)

6406531956211. ✔ (0,5,2,3,4)

6406531956212. ✖ (0,1,6,3,4)

6406531956213. ✔ (0,1,6,3,8)

Question Number : 163 Question Id : 640653586174 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 following elements added to a data structure, Y in the given order.

$$120,\ 56,\ 78,\ 109,\ 5,\ 100,\ 80,\ 76,\ 23,\ 90,\ 256,\ 16,\ 25$$

Identify the correct statement(s).

Options :

6406531956248. ✔ If Y = Stack, then Y(top) = 25

6406531956249. ✖ If Y = Queue, then the element to be deleted first is 25

6406531956250. ✔ If Y = Array, the time to search 5, would be linear time.

6406531956251. ✔ If Y = BST, the number of comparisons to search 90, would be 7

PDSA

Section Id :	64065339670
Section Number :	9
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
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384019
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 164 Question Id : 640653586176 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 (COMPUTER BASED EXAM)"

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