Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.1 to 0.3

Question Number : 204 Question Id : 640653816073 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 value of $P\left(\frac{1}{2} < X < \frac{5}{2} \mid X > 1\right)$?

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 :

0.11 to 0.17

DBMS

Section Id :	64065356692
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	50

Display Number Panel :	Yes
Section Negative Marks :	0
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 :	640653118912
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 205 Question Id : 640653816074 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 : DATA BASE MANAGEMENT SYSTEM (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 :

6406532733647. ✔ YES

6406532733648. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	640653118913
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 206 Question Id : 640653816075 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

Let us consider the following statistics for searching a condition within a given relation.

- Number of blocks containing record of the relation $(b) = 400$
- Time to transfer one block $(t_b) = 0.6$ milliseconds
- Time for one seek $(t_s) = 8$ milliseconds

What will be the cost of **selection query** using linear search file scan?

Options :

6406532733649. ✖ 24.8 milliseconds

6406532733650. ✖ 128 milliseconds

6406532733651. ✔ 248 milliseconds

6406532733652. ✖ 16.6 milliseconds

Question Number : 207 Question Id : 640653816076 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 $\mathbf{R}(A, B, C, D, E)$ and the functional dependencies set $\mathcal{F} = \{AD \rightarrow E, B \rightarrow D, BC \rightarrow A, E \rightarrow A, AB \rightarrow C, AC \rightarrow B\}$.
Let $\mathbf{R1}(A, D, E)$ be one of the decomposed relations. Find out the number of candidate keys applicable to $\mathbf{R1}(A, D, E)$.

Options :

6406532733653. ✖ 1

6406532733654. ✔ 2

6406532733655. ✖ 3

6406532733656. ✖ 4

Sub-Section Number : 3

Sub-Section Id : 640653118914

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 208 Question Id : 640653816077 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:
Intern$(intern\_code, intern\_name, project, hobby)$.
An intern can work in several projects and can have several hobbies. However, it maintains the FD: $intern\_code \rightarrow intern\_name$.

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

Options :

6406532733657. ✖ $\mathbf{R1}(intern\_code, intern\_name, project, hobby), \mathbf{R2}(intern\_code, project, hobby)$

6406532733658. ✖ $\mathbf{R1}(intern\_code, intern\_name, project), \mathbf{R2}(intern\_code, hobby)$

6406532733659. ✖ $\mathbf{R1}(intern\_code, intern\_name, hobby), \mathbf{R2}(intern\_code, project)$

6406532733660. ✔ $\mathbf{R1}(intern\_code, intern\_name), \mathbf{R2}(intern\_code, project), \mathbf{R3}(intern\_code, hobby)$

Sub-Section Number : 4

Sub-Section Id : 640653118915

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 209 Question Id : 640653816079 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the incorrect statement(s):

Options :

6406532733665. ✔ Time complexity of searching in a BST is O(nlogn)

6406532733666. ✖ In a B+ tree the leaf nodes are linked using a link list

6406532733667. ✔ Sparse indices are generally faster than dense indices for locating records.

6406532733668. ✖ B tree does not allow duplicate search-key values

Question Number : 210 Question Id : 640653816080 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct statement(s):

Options :

6406532733669. ✔ In Raid 0 architecture, if one disk fails, then all the data in the disk array is gone.

6406532733670. ✖ Raid 1 architecture provides excellent fault tolerance

6406532733671. ✔ In Raid 2 architecture, the striping unit consists of 2 bits.

6406532733672. ✔ In Raid 5 architecture, recovery of only one disk failure is possible

Sub-Section Number :	5
Sub-Section Id :	640653118916
Question Shuffling Allowed :	Yes

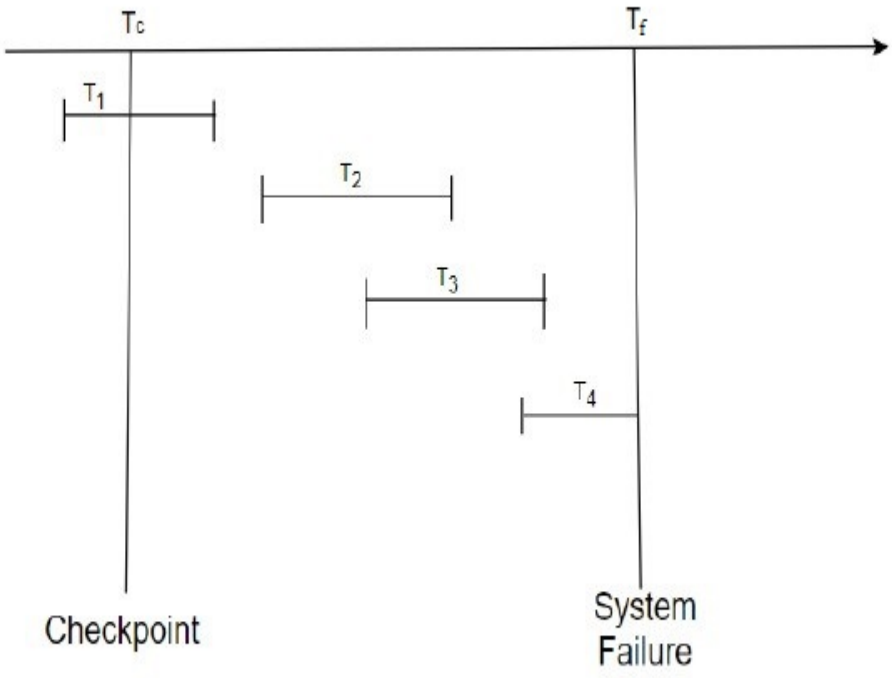
Is Section Default? : null

Question Number : 211 Question Id : 640653816081 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 figure as shown below that consists of four transactions T_1, T_2, T_3 and T_4.



Considering there is a system failure, choose the incorrect statement(s):

Options :

6406532733673. ✔ T_1 needs to be undone

6406532733674. ✔ T_2 can be ignored

6406532733675. ✖ T_1, T_2 and T_3 need to be redone

6406532733676. ✖ T_4 needs to be undone

Question Number : 212 Question Id : 640653816082 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 three transaction T_5, T_{10}, T_{15} having time-stamps 5, 10 and 15 respectively. Which of the following options is/are correct according to deadlock prevention Wound-Wait Scheme?

Options :

6406532733677. ✖ If T_{10} requests a data item held by T_5, then it will be preempted from T_5 and T_5 will be suspended ("wounded")

6406532733678. ✔ If T_5 requests a data item held by T_{10}, then it will be preempted from T_{10} and T_{10} will be suspended ("wounded")

6406532733679. ✔ If T_{15} requests a data item held by T_{10}, then T_{15} will "wait"

6406532733680. ✖ If T_{10} requests a data item held by T_{15}, then T_{10} will "wait"

Sub-Section Number :	6
Sub-Section Id :	640653118917
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 213 Question Id : 640653816078 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 the ER Diagram given below for the UEFA Champions League:

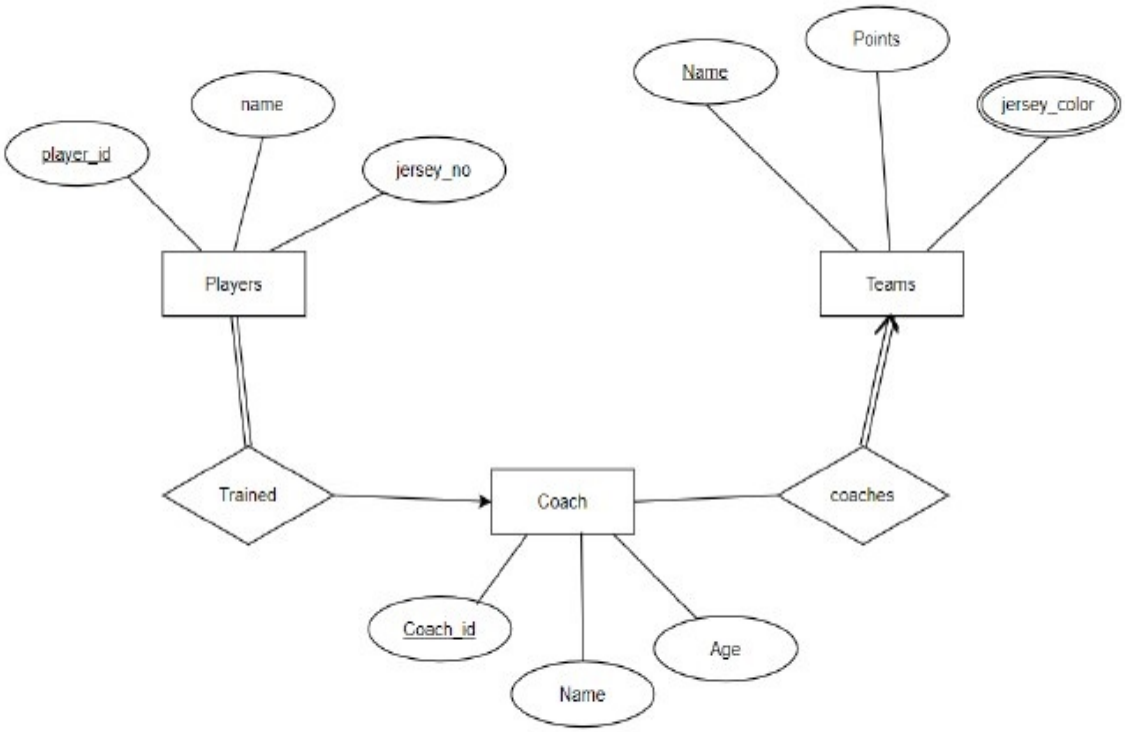


Figure 1: UCL ERD

Which of the following statements is/are true?

Options :

6406532733661. ✔ There can exist a coach who does not coach any team

6406532733662. ✔ A coach can be coaching at most one team

6406532733663. ✖ Every coach must be training at least one player

6406532733664. ✔ A player must have one coach

Question Number : 214 Question Id : 640653816083 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 the following two schedules S1 and S2 and three transactions T_1, T_2, T_3:

$$\text{S1}: R_2(X); W_2(X); R_3(Y); W_3(Y); R_1(X); W_1(X); R_2(X); W_2(X);$$
$$\text{S2}: R_3(X); W_3(X); W_2(X); W_2(Y); W_3(Z); R_1(Z); R_1(X); ; W_1(Y);$$

where $R_i(X)$ denotes a read operation by transaction T_i on a data item X, $W_i(X)$ denotes a write operation by transaction T_i on a data item X.

Which among the following statements is/are correct?

Options :

6406532733681. ✖ Schedule **S1** is Conflict Serializable.

6406532733682. ✔ Schedule **S2** is Conflict Serializable.

6406532733683. ✖ Schedule **S1** is View Serializable.

6406532733684. ✔ Schedule **S2** is View Serializable.

Question Number : 215 Question Id : 640653816084 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 the following relations:
players($\underline{pid}$, $name$, age, $jersey\_no$)
teams($team\_name$, $matches$, $points$, pid)
Choose the correct TRC or DRC expression which is equivalent to the below SQL query.

```
SELECT p.pid, t.matches
FROM players p natural join teams t
WHERE p.age > 21
```

Options :

6406532733685. ✔ $\{x \mid \exists p \in players\ \exists t \in teams(p.pid = t.pid \wedge p.age > 21 \wedge x.pid = p.pid \wedge x.matches = t.matches)\}$

6406532733686. ✖ $\{x \mid \exists p \in players\ \exists t \in teams(p.pid = t.pid \wedge p.age > 21 \wedge x.matches = t.matches)\}$

6406532733687. ✖ $\{< a, n > | \exists a, b, c, d(< a, b, c, d > \in players \wedge c > 21) \wedge \exists m, n, o, p(< m, n, o, p > \in teams)\}$

6406532733688. ✔ $\{< a, n > | \exists a, b, c, d(< a, b, c, d > \in players \wedge c > 21) \wedge \exists m, n, o, p(< m, n, o, p > \in teams \wedge a = p)\}$

Question Number : 216 Question Id : 640653816085 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 you are designing a database schema for a university management system. One of the key relations, R, represents information about courses offered, including details such as course code (X), instructor (Y), course title (Z), and maximum enrollment capacity (W). The functional dependencies for this relation are as follows:

$$\mathcal{F} = \{X \to Y, YZ \to W, W \to X, Y \to W\}$$

During the normalization process, you decide to decompose R into two relations: R1 and R2. Your goal is to ensure that this decomposition preserves all the information without any loss. Which of the following decomposition is lossless and dependency preserving? Choose the correct option(s).

Options :

6406532733689. ✔ $\mathbf{R1}(XY)$ and $\mathbf{R2}(YZW)$

6406532733690. ✔ $\mathbf{R1}(XW)$ and $\mathbf{R2}(YZW)$

6406532733691. ✖ $\mathbf{R1}(XW)$ and $\mathbf{R2}(YZ)$

6406532733692. ✖ $\mathbf{R1}(XWZ)$ and $\mathbf{R2}(YZ)$

Question Number : 217 Question Id : 640653816086 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

Imagine you're designing a database for a library management system where books are categorized based on their genres, authors, and publication years. The schema includes a relation $\mathbf{Books}(Title, Author, Genre, Year)$ to store information about the books available in the library. We have two sets of functional dependencies as follows:
$\mathbf{F1} = \{Title \rightarrow (Author, Genre, Year)\}$
$\mathbf{F2} = \{Title \rightarrow (Author, Genre), Genre \rightarrow Year\}$

Choose the correct option(s).

Options :

6406532733693. ✔ If F1 is applicable to relation **Books**, then it is 3NF

6406532733694. ✔ If F2 is applicable to relation **Books**, then it is 2NF

6406532733695. ✖ If F2 is applicable to relation **Books**, then it is BCNF

6406532733696. ✖ If F1 is applicable to relation **Books**, then it is 3NF but not in BCNF

Sub-Section Number :	7
Sub-Section Id :	640653118918
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 218 Question Id : 640653816092 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Consider the following schedule S with three transactions T1, T2,T3 and T4 :

$$\text{S: } R2(D); W2(D); R1(A); W1(A); R3(C); W3(C); W4(B)$$

The number of serial schedule for given schedule S is....

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

24

Sub-Section Number :	8
Sub-Section Id :	640653118919
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 219 Question Id : 640653816087 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 following relational schema $\mathrm{R}(A, B, C, D, E, F, G)$ with the given list of functional dependencies:
$\mathcal{F}=\{A \rightarrow BC, D \rightarrow A, E \rightarrow G, CD \rightarrow F\}$
Calculate the number of prime attributes.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	9
Sub-Section Id :	640653118920
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 220 Question Id : 640653816090 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 following monthly backup schedule used by a company:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1/ Full	2/ Incremental	3/ Incremental	4/ Incremental	5/ Differential	6/ Incremental	7/ Incremental
8/ Incremental	9/ Differential	10/ Incremental	11/ Incremental	12/ Incremental	13/ Differential	14/ Incremental
15/ Incremental	16/ Incremental	17/ Differential	18/ Incremental	19/ Incremental	20/ Incremental	21/ Differential
22/ Incremental	23/ Incremental	24/ Incremental	25/ Differential	26/ Incremental	27/ Incremental	28/ Incremental
29/ Differential	30/ Incremental					

Let A be the number of backup sets that need to be loaded for a complete recovery, if there is a system failure on the 15th day of the month (after the backup for the day had been completed). Let B be the number of backup sets that need to be loaded for a complete recovery , if there is a system failure on the 30th day of the month (before the backup for the day had been completed).What will be the value of A-B?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 221 Question Id : 640653816091 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 following schedule S with four transactions T1, T2, T3,T4:

S: $R2(A), W2(A), W4(A), W4(B), R3(B), W3(C), R4(C), R1(C), R2(D), W3(D)$

Where, Ri(A) denotes a read operation by transaction Ti on a data item A, Wi(A) denotes a write operation by transaction Ti on a data item A.
What is the possible number of conflict serializable schedules of the above schedule S?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number :	10
Sub-Section Id :	640653118921
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 222 Question Id : 640653816088 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

The following key values are inserted into a B^+ tree of order 3 in the given sequence.
The tree is initially empty.
5,9,13,17,3,11,1,20,14,7
How many node splits will be there in total?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 223 Question Id : 640653816089 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 table **Students** given below:

ID	Name	Department	Marks
001	Harry	Comp. Sci.	90
002	Louis	Maths	88
003	Liam	History	80
004	Niall	Comp. Sci.	86
005	Zayn	History	91
006	Luke	Geography	82
007	Ashton	Maths	87
008	Bradley	Music	78
009	Connor	Biology	92
010	Alex	Music	100

Let hash function h(x) generate 16-bit binary hash values for the distinct elements in *Department* attribute:

Comp. Sci.- 1100 0010 1110 0101
History- 1000 1010 0101 1110
Maths- 0111 1100 0011 0110
Geography- 1110 0101 0000 1101
Music- 0100 1010 1111 1011
Biology- 0011 1111 1010 0101

If we insert the records in the following order:
Harry, Liam, Niall, Connor, Bradley, Luke, Louis, Zayn, Alex, Ashton.

Considering bucket size as 2, using dynamic hashing technique, how many minimum number of buckets will be required to distribute all the records?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 11

Sub-Section Id : 640653118922

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653816093 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 : (224 to 225)

Question Label : Comprehension

Consider the table Points_Table given below to answer the given subquestions.

Team_ID	Team_Name	Country	Wins	Losses	Draw	Total_Points
001	Barcelona	Spain	8	1	2	16
002	Real Madrid	Spain	6	3	3	12
003	Arsenal	England	5	4	3	10
004	Man United	England	4	5	2	8
005	PSG	France	4	4	3	8
006	Bayern	Germany	3	6	2	6
007	Man City	England	2	4	5	4

Table 1: Points_Table

Sub questions

Question Number : 224 Question Id : 640653816094 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 will be the output of the following SQL query:

```
SELECT Count(*)
FROM  ( ( SELECT Team_Name, Country
          FROM Points_Table) AS P
          NATURAL JOIN ( SELECT Country, Team_ID, Wins, Total_Points
                         FROM Points_Table) AS Q )
WHERE Wins>=5 and Total_Points>10
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 225 Question Id : 640653816095 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

Choose the correct expression(s) for the statement given below:

Name all the teams from Spain, with at least 2 losses and at most 3 draws.

Options :

6406532733704. ✔ $\{M|\exists P \in Points\_Table(P.Country =' Spain' \wedge P.Losses >= 2 \wedge P.Draw <= 3 \wedge M.Team\_Name = P.Team\_Name)\}$

6406532733705. ✖ $\Pi_{Team\_Name}(\sigma_{Country='Spain' \wedge Losses>=2 \wedge Draw>=3}(Points\_Table))$

6406532733706. ✔ $\Pi_{Team\_Name}(\sigma_{Country='Spain' \wedge Losses>=2 \wedge Draw<=3}(Points\_Table))$

6406532733707. ✖ $\{M|\exists P \in Points\_Table(P.Country =' Spain' \wedge P.Losses >= 2 \wedge P.Draw <= 3)\}$

PDSA

Section Id :	64065356693
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24
Number of Questions to be attempted :	24
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	640653118923
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 226 Question Id : 640653816096 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