Question Number : 68 Question Id : 640653668506 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

Find $P\left(|X| < \frac{\alpha}{2}\right)$. 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 :

0.39 to 0.45

DBMS

Section Id :	64065344899
Section Number :	5
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
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 :	64065395147
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 69 Question Id : 640653668507 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 :

6406532239698. ✔ YES

6406532239699. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065395148
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 70 Question Id : 640653668508 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 instance of the **student_marks** table in the IIT Madras BS degree database, as shown in Table 1.

roll_no	course_id	assignment_id	marks
21f12	CS2001	Quiz-1	65
21f12	CS2001	Quiz-2	72
21f12	CS2001	End-Term	79
21f13	CS2001	End-Term	81
21f13	CS2001	Quiz-2	90
21f11	CS2001	Quiz-1	59
21f11	CS2001	End-Term	95

Table 1: **student_marks**

The professor is interested in the data shown in Table 2.

roll_no	Quiz1	Quiz2	EndTerm
21f11	59	null	95
21f12	65	72	79
21f13	null	90	81

Table 2: **student_marks**

Which of the following SQL queries will produce the resultant data shown in Table 2

Options :

6406532239700. ✖

```
With A as(select roll_no,marks from student_marks where
        assignment_id='Quiz-1'),
    B as(select roll_no,marks from student_marks where
        assignment_id='Quiz-2'),
    C as(select roll_no,marks from student_marks where
        assignment_id='End-Term')

select A.roll_no,A.marks as Quiz1 , B.marks as Quiz2, C.marks as EndTerm
From C left join A on C.roll_no=A.roll_no
left join B on B.roll_no=C.roll_no
order by roll_no
```

6406532239701. ✔

```
With A as(select roll_no,marks from student_marks where
        assignment_id='Quiz-1'),
    B as(select roll_no,marks from student_marks where
        assignment_id='Quiz-2'),
    C as(select roll_no,marks from student_marks where
        assignment_id='End-Term')

select C.roll_no,A.marks as Quiz1 , B.marks as Quiz2, C.marks as EndTerm
From C left join A on C.roll_no=A.roll_no
left join B on B.roll_no=C.roll_no
order by roll_no
```

6406532239702. ✖

```
With A as(select roll_no,marks from student_marks where
        assignment_id='Quiz-1'),
    B as(select roll_no,marks from student_marks where
        assignment_id='Quiz-2'),
    C as(select roll_no,marks from student_marks where
        assignment_id='End-Term')

select B.roll_no,A.marks as Quiz1 , B.marks as Quiz2, C.marks as EndTerm
From C left join A on C.roll_no=A.roll_no
left join B on B.roll_no=C.roll_no
order by roll_no
```

6406532239703. ✖

```
With A as(select roll_no,marks from student_marks where
        assignment_id='Quiz-1'),
    B as(select roll_no,marks from student_marks where
        assignment_id='Quiz-2'),
    C as(select roll_no,marks from student_marks where
        assignment_id='End-Term')

select A.roll_no,A.marks as Quiz1 , B.marks as Quiz2, C.marks as EndTerm
From C full join A on C.roll_no=A.roll_no
full join B on B.roll_no=C.roll_no
order by roll_no
```

Question Number : 71 Question Id : 640653668509 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 relation in **university** database.
student(*ID*, *name*, *dept_name*)
takes(*ID*, *course_id*)
course(*course_id*, *title*, *dept_name*)

Which of the following queries returns the *ID* and *name* of students who have taken all the courses offered by the Biology department?

Options :

6406532239704. ✖
```
select distinct S.ID, S.name
from student as S
where not exists ( (select course_id
from course
where dept_name = 'Biology')
union
(select T.course_id
from takes as T
where S.ID = T.ID))
```

6406532239705. ✖
```
select distinct S.ID, S.name
from student as S
where  exists ( (select course_id
from course
where dept_name = 'Biology')
except
(select T.course_id
from takes as T
where S.ID = T.ID))
```

6406532239706. ✔
```
select distinct S.ID, S.name
from student as S
where not exists ( (select course_id
from course
where dept_name = 'Biology')
except
(select T.course_id
from takes as T
where S.ID = T.ID))
```

6406532239707. ✖

```
select distinct S.ID, S.name
from student as S
where not exists ( (select course_id
from course
where dept_name = 'Biology')
intersect
(select T.course_id
from takes as T
where S.ID = T.ID))
```

Question Number : 72 Question Id : 640653668516 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 relational schema:
Passenger(*P_id*, *P_name*, *B_id*)
Pilot(*Pilot_id*, *Pilot_name*, *Flight_No*)
Bookings(*Booking_id*, *Boarding*, *Destination*, *Flight_no*, *P_id*, *Pilot_id*)

Choose the suitable query that will find the names of all passengers who flew from New York with pilot named James Wan in flight number 3005.

Options :

6406532239725. ✔ $\Pi_{P\_name}(Passenger \bowtie \Pi_{P\_id}(\sigma_{Boarding='NewYork' \wedge Flight\_No='3005' \wedge Pilot\_name='James\,Wan'}(Pilot \bowtie Bookings)))$

6406532239726. ✖ $\Pi_{P\_name}(Passenger \bowtie \Pi_{Pilot\_name}(\sigma_{Boarding='NewYork' \wedge Flight\_No='3005' \wedge Pilot\_name='James\,Wan'}(Pilot \bowtie Bookings)))$

6406532239727. ✖ $\Pi_{P\_name}(Passenger \bowtie \Pi_{P\_id}(\sigma_{Boarding='NewYork' \wedge Flight\_No='3005' \wedge Pilot\_name='James\,Wan'}(Passenger \bowtie Bookings)))$

6406532239728. ✖ $\Pi_{P\_name}(Passenger \bowtie \Pi_{P\_id}(\sigma_{Destination='NewYork' \wedge Flight\_No='3005' \wedge Pilot\_name='James\,Wan'}(Pilot \bowtie Passenger)))$

Question Number : 73 Question Id : 640653668517 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

What is the minimum number of tables required to convert the given ER Diagram into the relational model?

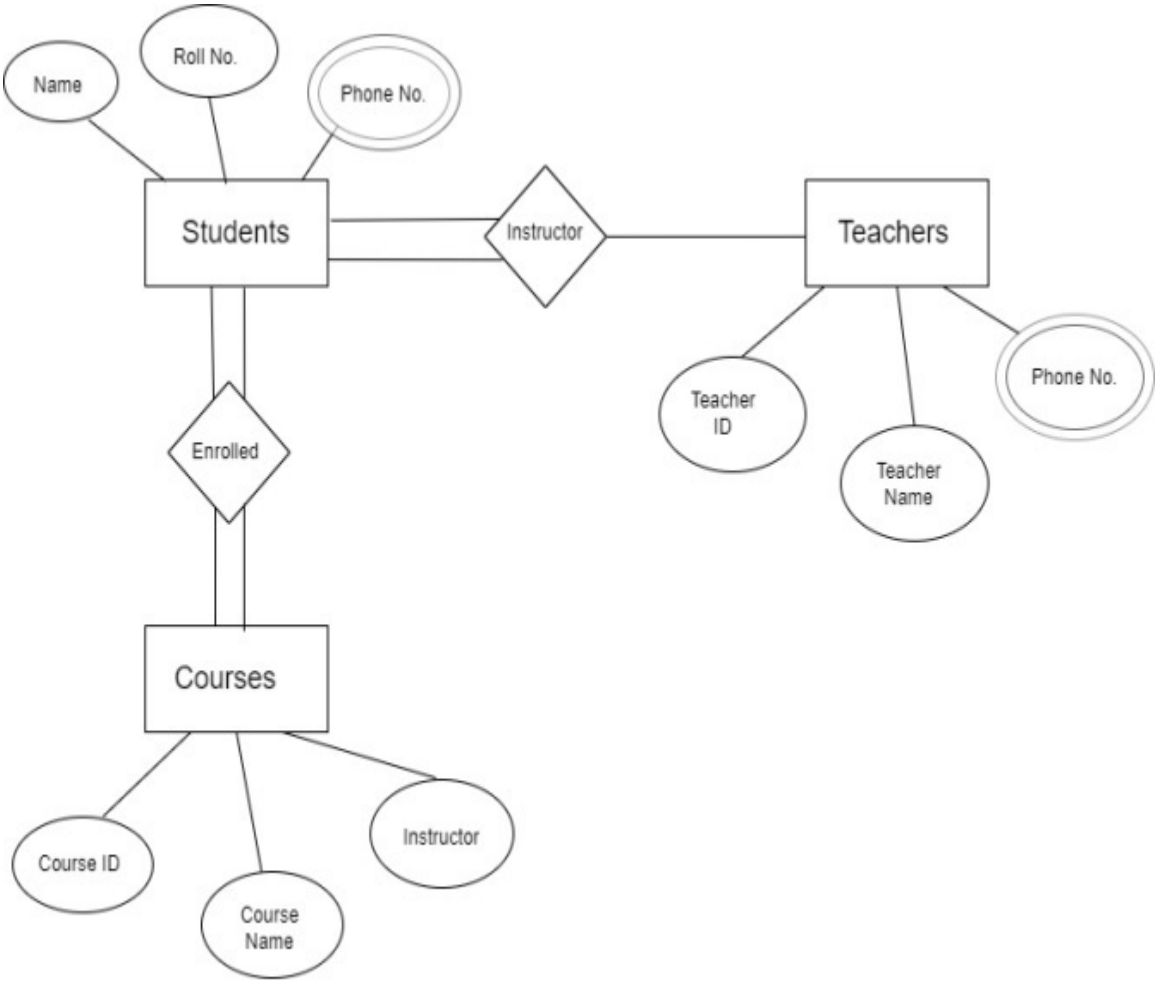


Figure 2: ER Diagram

Options :

6406532239729. ✖ 5

6406532239730. ✔ 7

6406532239731. ✖ 3

6406532239732. ✖ 4

Question Number : 74 Question Id : 640653668524 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 relations:
auto_part($\underline{pid}, pname, color$)
auto_suppliers($\underline{sid}, sname, location$)
catalog($\underline{pid, sid}, price$)

Consider the TRC expression:
$\{x \mid \exists s \in auto\_suppliers\ \exists c \in catalog\ \exists p \in auto\_part(s.location = `Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge x.pname = p.pname \wedge s.sid = c.sid \wedge p.pid = c.pid)\}$
Choose the correct DRC expression equivalent to the TRC expression shown above.

Options :

6406532239750. ✔ $\{< p, n > \mid \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = `Mumbai') \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge m = a \wedge p = b)\}$

6406532239751. ✖ $\{< q, n > \mid \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = `Mumbai') \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge m = a \wedge p = b)\}$

6406532239752. ✖ $\{< p, n > \mid \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = `Mumbai') \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000)\}$

6406532239753. ✖ $\{< q, n > \mid \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = `Mumbai') \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000)\}$

Sub-Section Number :	3
Sub-Section Id :	64065395149
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 75 Question Id : 640653668515 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 tables **Employee** and **Manager** as shown below:

EmpID	Name	Age
1	Percy	16
2	Jason	17
3	Nico	14
4	Leo	15
5	Frank	16

Table 7: **Employee Table**

Manager ID	Name	Age
5	Annabeth	20
2	Piper	18
3	Hazel	19

Table 8: **Manager Table**

How many tuples will be there as a result of the following query?

```
SELECT EmpID
FROM   Employee
WHERE  Employee.Age > ALL (SELECT Manager.Age
                   FROM
                   Manager
                   WHERE  Manager.Name = 'Rayna')
```

Options :

6406532239721. ✔ 5

6406532239722. ✖ 0

6406532239723. ✖ 3

6406532239724. ✖ 1

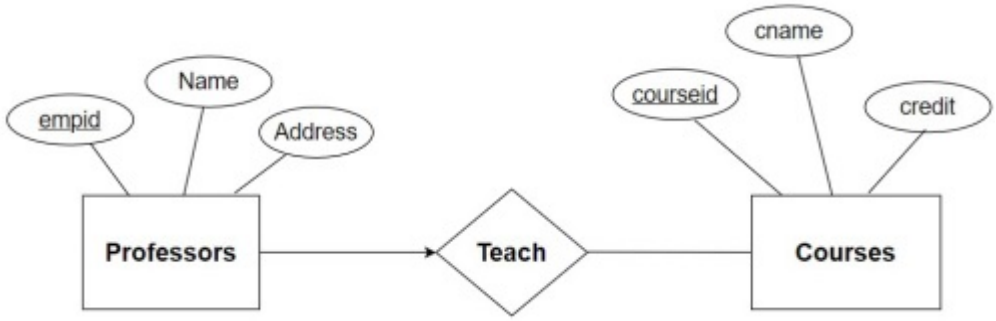
Question Number : 76 Question Id : 640653668523 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

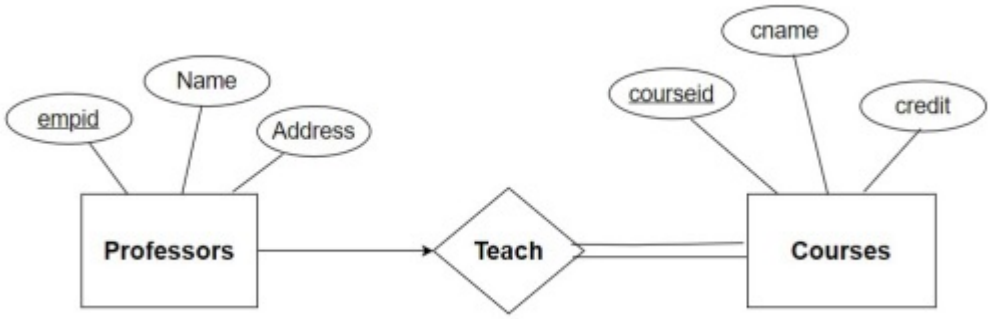
Question Label : Multiple Choice Question

A university database contains information about professors (identified by empid) and courses (identified by courseid). Professors have a name, and address. Courses have a name and a number of credits. Professors teach courses.
Draw an ER diagram for the following situation:
Every professor teaches exactly one course, and every course must be taught by some professors.
Choose the correct option.

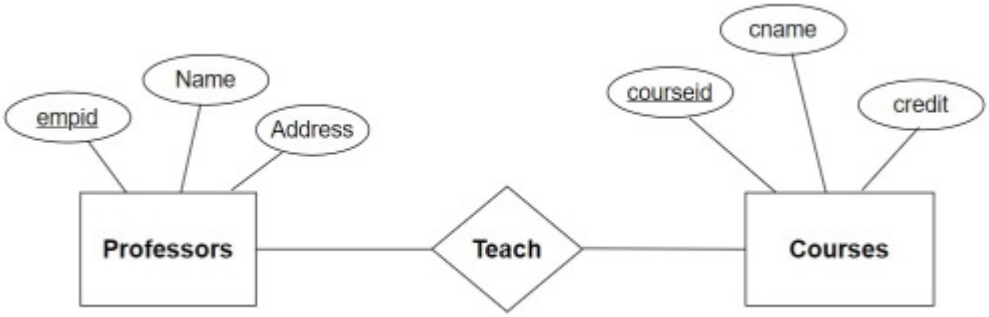
Options :



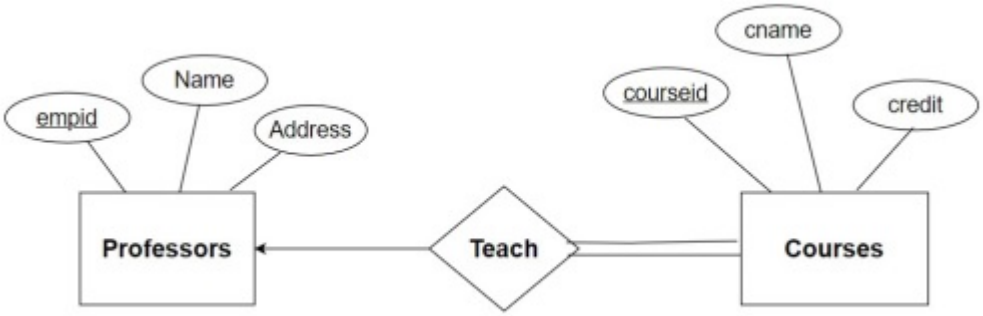
6406532239746. ✖



6406532239747. ✔



6406532239748. ✖



6406532239749. ✖

Sub-Section Number : 4

Sub-Section Id : 64065395150

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 77 Question Id : 640653668518 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 describes the concept that any change made to the physical schema should not affect the logical schema of the DBMS?

Options :

6406532239733. ✖ Logical Data Independence

6406532239734. ✔ Physical Data Independence

6406532239735. ✖ View Data Independence

6406532239736. ✖ None of these

Sub-Section Number : 5

Sub-Section Id : 64065395151

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 78 Question Id : 640653668511 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 tables **customer** and **bank_name** as shown below.

customer_name	bank_name
Ram	SBI
Rajib	Axis
Rajib	SBI
Rakesh	Axis
Rajib	PNB
Rahul	SBI
Vijay	PNB

Table 5: **customer**

bank_name
SBI
Axis
PNB

Table 6: **bank_name**

Which of the following relational algebra expressions gives the *customer_name* of customers who have accounts in all branches of the bank?

Options :

6406532239709. ✖ $\Pi_{customer\_name}(customer \bowtie bank\_name)$

6406532239710. ✖ $\Pi_{customer\_name}(customer \times bank\_name)$

6406532239711. ✔ $\text{customer} \div \text{bank\_name}$

6406532239712. ✔ $\Pi_{customer\_name}(\sigma_{customer\_name='Rajib'}(customer \bowtie bank\_name))$

Sub-Section Number : 6

Sub-Section Id : 64065395152

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 79 Question Id : 640653668510 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 tables **student** and **course** as shown below.

ID	name	dept_name
21f11	Ram	CS
21f12	Rakesh	ME
21f13	Pranav	EE
21f14	Rajib	CS
21f15	Vikash	BT

Table 3: **student**

course_id	title	dept_name
C001	DBMS	CS
C002	CAD	ME
C003	Digital	EE
C004	PDSA	CS

Table 4: **course**

How many rows are returned by the below query?

```
SELECT ID FROM student,course
EXCEPT ALL
SELECT ID FROM student
EXCEPT ALL
SELECT ID FROM student
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Sub-Section Number :	7
Sub-Section Id :	64065395153
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653668512 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 : (80 to 81)

Question Label : Comprehension

Consider a School Information System Schema given below for the given subquestions.

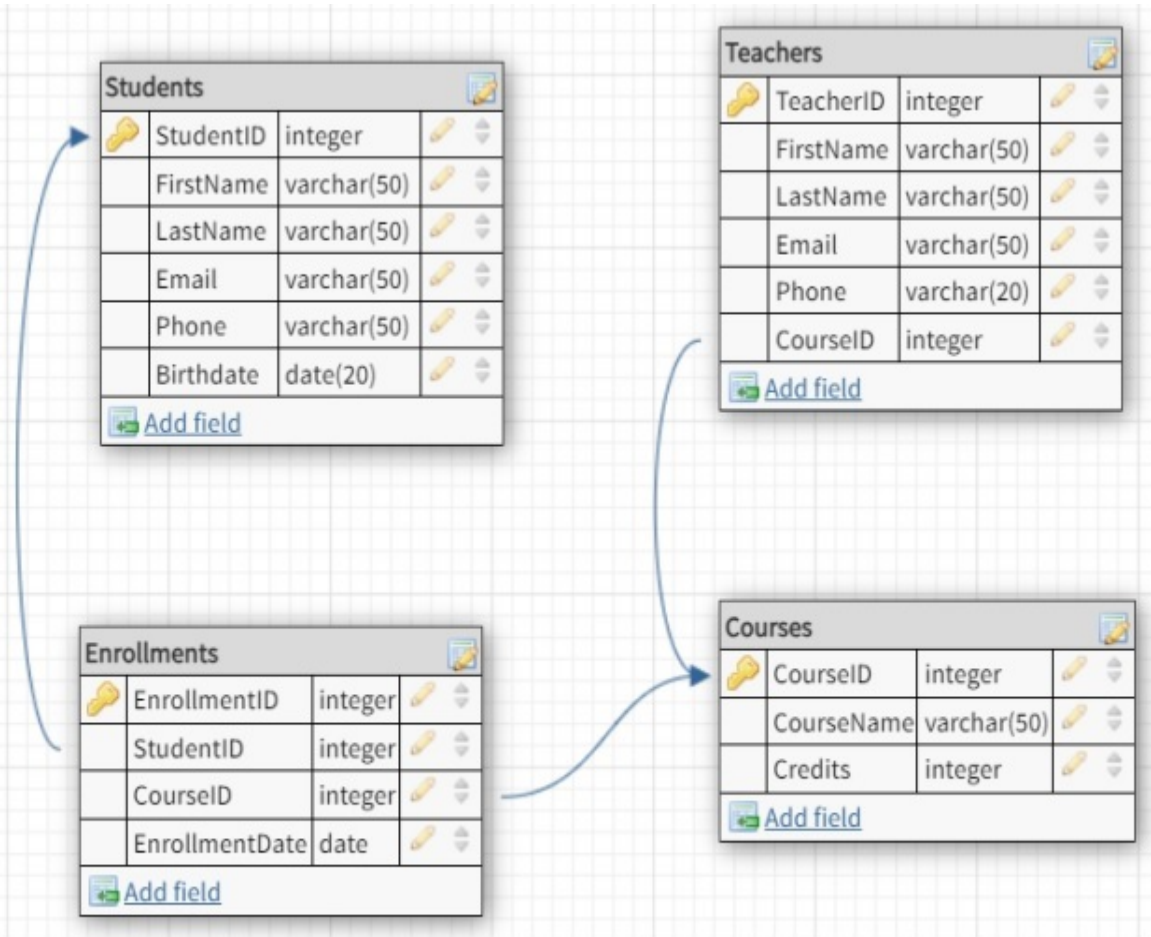


Figure 1: School Information System Schema

Sub questions

Question Number : 80 Question Id : 640653668513 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

Choose the query that will output the distinct first and last names of all students who enrolled in at least one course before '2023-08-03'.

Options :

6406532239713. ✖
```
Select Distinct FirstName, LastName
From Students Join Enrollments
on students.studentid = enrollments.courseid  and
EnrollmentDate < '2023-08-03'
```

6406532239714. ✔
```
Select Distinct FirstName, LastName
From Students Natural Join Enrollments
Where EnrollmentDate < '2023-08-03'
```

6406532239715. ✖
```
Select Distinct FirstName, Distinct LastName
From Students Natural Join Enrollments
Where EnrollmentDate < '2023-08-03'
```

6406532239716. ✖
```
Select Distinct FirstName, Distinct LastName
From Students Join Enrollments
on EnrollmentDate < '2023-08-03'
```

Question Number : 81 Question Id : 640653668514 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

Choose the SQL query that will give output *FirstName* and *Email* of all teachers whose phone numbers end with '8' and who do not teach 'History'

Options :

6406532239717. ✔
```
Select Teachers.FirstName, Teachers.Email
From Teachers Natural Join Courses
Where Phone like '%8' AND CourseName <> 'History'
```

6406532239718. ✖
```
Select Teachers.FirstName, Teachers.Email
From Teachers Join Courses
Where Phone like '%8' AND CourseName not like 'History'
```

6406532239719. ✖
```
Select Teachers.FirstName, Teachers.Email
From Teachers Natural Join Courses
Where Phone like '%8_' AND CourseName <> 'History'
```

6406532239720. ✖
```
Select Teachers.FirstName, Teachers.Email
From Teachers Natural Join Courses
Where Phone like '8%' AND CourseName <> 'History'
```

Sub-Section Number :	8
Sub-Section Id :	64065395154
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653668519 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 : (82 to 84)

Question Label : Comprehension

Consider the SQL query to create a table **Insurance** and **Nominee** as shown below and answer the given subquestions

```
CREATE TABLE insurance (ins_id varchar(20) primary key,
policyHolderName varchar(20) not null,
age int not null, premium int not null )

CREATE TABLE nominee (nominee_id varchar(20) primary key,
NomineeName varchar(20), relationship varchar(20), ins_id
varchar(20), foreign key (ins_id) references
insurance(ins_id) ON DELETE CASCADE)
```

The instance of the table **insurance** and **nominee** is as shown below:

ins_id	policyHolderName	age	premium
INS001	Ramesh	28	9800
INS002	Sumesh	29	8800
INS003	Suresh	33	12200
INS004	Rajesh	31	11100

Table 9: insurance

nominee_id	NomineeName	relationship	ins_id
NM001	Shakti	Wife	INS001
NM002	Mukti	Wife	INS002
NM003	Yukti	Daughter	INS003

Table 10: nominee

Sub questions

Question Number : 82 Question Id : 640653668520 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

The following SQL query is executed:

```
delete from insurance where ins_id = 'INS001'
```

What will be the value of **x**, if **x** represents the total number of rows in **insurance** and **nominee** table counted together?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 83 Question Id : 640653668521 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 following insert statements are executed in the given sequence.

```
insert into insurance values ('INS005', 'Rakesh', 24, 7000);
insert into nominee values ('NM004', 'Sonu', 'Son', 'INS005');
insert into nominee values ('NM004', 'Suman', 'Wife', 'INS004');
insert into nominee values ('NM004', 'Monu', 'Son', 'INS005');
insert into nominee(nominee_id, ins_id) values ('NM010','INS005');
```

What will be the output of the below query?

```
SELECT * FROM nominee
```

Options :

6406532239738. ✖

nominee_id	NomineeName	relationship	ins_id
NM001	Shakti	Wife	INS001
NM002	Mukti	Wife	INS002
NM003	Yukti	Daughter	INS003

6406532239739. ✖

nominee_id	NomineeName	relationship	ins_id
NM001	Shakti	Wife	INS001
NM002	Mukti	Wife	INS002
NM003	Yukti	Daughter	INS003
NM004	Sonu	Son	INS005

6406532239740. ✔

nominee_id	NomineeName	relationship	ins_id
NM001	Shakti	Wife	INS001
NM002	Mukti	Wife	INS002
NM003	Yukti	Daughter	INS003
NM004	Sonu	Son	INS005
NM010	NULL	NULL	INS005

nominee_id	NomineeName	relationship	ins_id
NM001	Shakti	Wife	INS001
NM002	Mukti	Wife	INS002
NM003	Yukti	Daughter	INS003
NM004	Sonu	Son	INS005
NM004	Suman	Wife	INS004
NM010	NULL	NULL	INS005

6406532239741.

Question Number : 84 Question Id : 640653668522 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 information about the insurance policy holder having a premium greater than 9000 is stored in a VIEW by name **premiumholder**. The SQL query is shown below:

```
create view premiumholder as
select * from insurance natural join nominee
where premium > 9000
```

What will be the output of relational algebra expression shown below?

$\Pi_{nomineename}(\sigma_{age>25}(premiumholder))$

Options :

6406532239742. ✖

nomineename
Yukti
Mukti

6406532239743. ✖

nomineename
Shakti
Mukti

6406532239744. ✖

nomineename
Shakti
Yukti
Mukti

6406532239745. ✔

nomineename
Shakti
Yukti

PDSA

Section Id :	64065344900
Section Number :	6
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
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes