R is a zero-matrix (all entries are zeros) of size 3 x 3 and

$$P = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}, Q = \begin{bmatrix} 1 & -1 & 1 \\ 1 & -1 & 1 \\ 1 & -1 & 1 \end{bmatrix}$$

What is the output of the following snippet of code?

```
val = 0
for i in range(3):
    for j in range(3):
        R[i][j] = P[i][j] * Q[i][j]
        val = val + R[i][j]
print(val)
```

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

15

DBMS

Section Id :	64065323901
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 :	64065355340
Question Shuffling Allowed :	No

Question Number : 65 Question Id : 640653386719 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 :

6406531286072. ✔ YES

6406531286073. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355341
Question Shuffling Allowed :	Yes

Question Number : 66 Question Id : 640653386729 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 following SQL query.

```
SELECT emp_name FROM employees WHERE salary > 20000
```

Which among the following steps of query processing will convert the above query to the given relational algebra expression?

$$\Pi_{emp\_name}(\sigma_{salary>20000}(employees))$$

Options :

6406531286105. ✖ Evaluation Engine

6406531286106. ✔ Parser and Translator

6406531286107. ✖ Optimizer

6406531286108. ✖ Execution Plan

Question Number : 67 Question Id : 640653386733 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

An organization called **Super Kids** offers educational and recreational opportunities for disabled children. The details of all the students have been added to Table **Students**. In the case that a student leaves the school, their names and details are removed from the table. Which among the following categories of SQL commands is used for removing the records from the table?

Options :

6406531286121. ✖ DDL

6406531286122. ✔ DML

6406531286123. ✖ DCL

6406531286124. ✖ TCL

Sub-Section Number : 3

Sub-Section Id : 64065355342

Question Shuffling Allowed : Yes

Question Number : 68 Question Id : 640653386728 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 following E-R diagram as shown in figure 1:

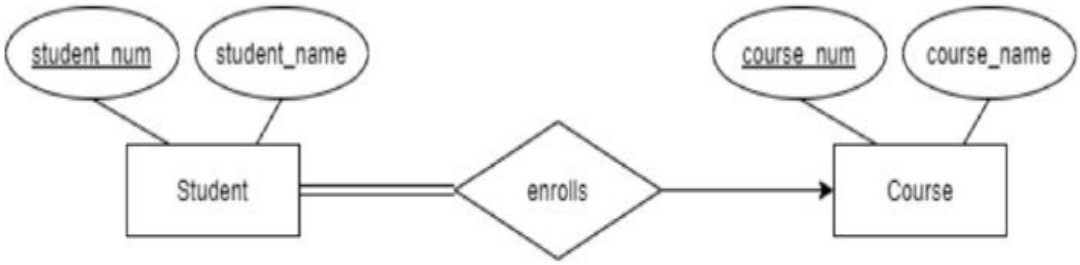

Figure 1: ER-Diagram

Which among the following is the correct relational schema for the given ER Diagram?

Options :

6406531286101. ✔ $\mathbf{Student}(\underline{student\_num}, student\_name, course\_num)$
$\mathbf{Course}(\underline{course\_num}, course\_name)$

6406531286102. ✖ $\mathbf{Student}(\underline{student\_num}, student\_name)$
$\mathbf{Course}(\underline{course\_num}, course\_name)$

6406531286103. ✖ $\mathbf{Student}(\underline{student\_num}, student\_name)$
$\mathbf{Course}(\underline{course\_num}, course\_name, student\_name)$

6406531286104. ✖ $\mathbf{Student}(\underline{student\_num}, student\_name, course\_num)$
$\mathbf{Course}(\underline{course\_num}, course\_name, student\_num)$

Question Number : 69 Question Id : 640653386731 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 relation insurance(*ins_id, company_name, ins_type, ratings*) shown in Figure 3.

ins_id	company_name	ins_type	ratings
I0001	Naturol	Health	5
I0002	Prismz	Health	4
I0003	Mind Free	Education	2
I0004	Capevirgo	Life-Term	3

Figure 3: insurance

Which among the following options will be the correct output for the given query?

```
SELECT 'Good' AS no_of_goodcompanies
FROM insurance
WHERE ratings >= 3
```

Options :

Output:

no_of_goodcompanies
Naturol
Prismz
Capevirgo

6406531286113. ✖

Output:

no_of_goodcompanies
Good
Good
Good

6406531286114. ✔

6406531286115. ✖

Output:

no_of_goodcompanies
Naturol
Prismz
Mind Free
Capevirgo

Output:

no_of_goodcompanies

6406531286116.

Question Number : 70 Question Id : 640653386732 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 following relational schemas.

employee(*emp_id, emp_name, dob, dept_id, desg_id*)
department(*dept_id, dept_name*)
designation(*desg_id, desg_name, salary*)

Choose the correct options to fill in the blanks of the given query so that it returns the highest salary in 'Computer Science' department.

```
SELECT ___A___(de.salary)
FROM employee AS e
INNER JOIN department AS d ON e.dept_id = d.dept_id
INNER JOIN designation AS de ON e.desg_id = de.desg_id
___B___ BY d.dept_name
___C___ d.dept_name = 'Computer Science'
```

Options :

6406531286117. A:MAX, B:GROUP, C:WHERE

6406531286118. ✔ A:MAX, B:GROUP, C:HAVING

6406531286119. ✖ A:MAX, B:ORDER, C:WHERE

6406531286120. ✖ A:MAX, B:ORDER, C:HAVING

Sub-Section Number : 4

Sub-Section Id : 64065355343

Question Shuffling Allowed : Yes

Question Number : 71 Question Id : 640653386727 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 Table 4 and Table 5.

a	b	c
a1	b1	c1
a2	b2	c2
a3	b3	c3
a4	b4	c4

Table 4: Alpha

c	d	e
c1	d1	e1
c2	d2	e2
c1	d1	e3
c2	d4	e4

Table 5: Beta

Find out the number of tuples returned by the following relational algebra expression.
$(\text{Alpha} \times \text{Beta}) \div \Pi_{c,d}(\text{Beta})$

Choose the correct option.

Options :

6406531286097. ✔ 0

6406531286098. ✖ 1

6406531286099. ✖ 2

6406531286100. ✖ 3

Question Number : 72 Question Id : 640653386730 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 relation **customers**(*cus_id, cus_name, credit_score*) shown in Figure 2.

cus_id	cus_name	credit_score
C001	Suresh	200
C002	Naksh	180
C003	Ramesh	270
C004	Ram	300
C005	Pratik	400
C006	Lokesh	350

Figure 2: customers

Which among the following queries will return the output given below?

cus_id	creditscore
C001	100
C006	175
C003	135

Options :

6406531286109. ✖

```
SELECT cus_id, credit_score/2 AS creditscore
FROM customers
WHERE cus_name LIKE '%e%'
ORDER by cus_name desc
```

6406531286110. ✖

```
SELECT cus_id, credit_score/2 AS creditscore
FROM customers
WHERE cus_name NOT LIKE '%esh'
AND cus_name LIKE '%a%'
```

6406531286111. ✔

```
SELECT cus_id, credit_score/2 AS creditscore
FROM customers
WHERE cus_name NOT LIKE '_r%'
AND cus_name LIKE '%es%'
```

6406531286112. ✖

```
SELECT cus_id, credit_score/2 AS creditscore
FROM customers
WHERE cus_name NOT LIKE '%e_'
ORDER by cus_name asc
```

Question Number : 73 Question Id : 640653386734 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 two relational schemas **Faculty**(*f_id, name, dept_name*) and **Student** (*s_id, name, dept_name*) as shown in the Figure 4.

f_id	name	dept_name
F001	Marry	Biology
F003	Abhi	Zoology
F007	Harry	Physics
F002	Sunil	Biology
F009	Rose	Zoology

s_id	name	dept_name
S001	Shima	Physics
S002	Rose	Zoology
S003	Henry	Zoology
S004	Abhi	Biology
S005	Abhi	Physics

Figure 4: **Faculty and Student**

What will be the total numbers of tuples resulting from the following relational algebra expression?

$$\Pi_{name,dept\_name}(Faculty \bowtie Student)$$

Options :

6406531286125. ✖ 3

6406531286126. ✖ 2

6406531286127. ✔ 1

6406531286128. ✖ 4

Sub-Section Number : 5

Sub-Section Id : 64065355344

Question Shuffling Allowed : Yes

Question Number : 74 Question Id : 640653386723 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Consider the following SQL statement:

```
CREATE TABLE Student(
        Roll_no varchar(8) primary key,
        Name varchar(10),
        Dept_name varchar(10),
        Semester varchar(10),
        check (Semester in ('Fall', 'Winter', 'Summer')));
```

Identify the correct INSERT statement for table **Student**.

Options :

6406531286083. ✔
```
INSERT INTO Student values('CS101','Rakesh','CS','Winter')
```

6406531286084. ✔
```
INSERT INTO Student(Roll_no,Name,Dept_name,Semester)
values('CS102','Ram','CS','Summer')
```

6406531286085. ✖
```
INSERT INTO Student(Roll_no,Name,Dept_name,Semester)
values('CS104','Shyam','CS','Spring')
```

6406531286086. ✖
```
INSERT INTO Student ('CS106','Mohan','CS','Winter')
```

Sub-Section Number : 6

Sub-Section Id : 64065355345

Question Shuffling Allowed : Yes

Question Number : 75 Question Id : 640653386720 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the relational schema given below.
student(*roll_no*, *name*, *house_name*)

Which of the following queries will return the student's name and number of students in their respective houses?

Options :

6406531286074. ✖

```
SELECT e.name AS student_name, dc.house_count AS  count
FROM student e,
    (SELECT house_name, COUNT(*) AS house_count
    FROM student
    GROUP BY name) AS dc
    WHERE e.house_name = dc.house_name;
```

6406531286075. ✔

```
SELECT e.name AS student_name, dc.house_count AS  count
FROM student e,
    (SELECT house_name, COUNT(*) AS house_count
    FROM student
    GROUP BY house_name) AS dc
    WHERE e.house_name = dc.house_name;
```

6406531286076. ✖

```
WITH house_count AS (select
house_name, COUNT(*) AS house_count FROM student
GROUP BY house_name)

SELECT e.name AS student_name , dc.house_count AS count
FROM student e, house_count dc
WHERE e.name = dc.name;
```

6406531286077. ✔

```
WITH house_count AS (select
house_name, COUNT(*) AS house_count FROM student
GROUP BY house_name)

SELECT e.name AS student_name , dc.house_count AS count
FROM student e, house_count dc
WHERE e.house_name = dc.house_name;
```

Question Number : 76 Question Id : 640653386721 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the relation bike(*name*, *model*, *price*).
Assume that no two bikes have the same price.
Choose the appropriate query/queries to find the names of four most expensive bikes.

Options :

6406531286078. ✖

```
SELECT name  FROM bike
ORDER BY price
FETCH FIRST 4 ROWS ONLY
```

6406531286079. ✔

```
SELECT name  FROM bike
ORDER BY price DESC
FETCH FIRST 4 ROWS ONLY
```

6406531286080. ✔

```
SELECT name FROM bike a
WHERE
(SELECT COUNT(price)
FROM bike b
WHERE b.price>a.price)<4
```

6406531286081. ✖

```
SELECT name FROM bike a
WHERE
(SELECT COUNT(price)
FROM bike b
WHERE b.price>a.price)>4
```

Question Number : 77 Question Id : 640653386725 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the following relations:

auto_part($\underline{pid}$, $pname$, $color$)
auto_suppliers($\underline{sid}$, $sname$, $location$)
catalog($\underline{pid}$, $\underline{sid}$, $price$)

Choose the correct relational algebra expressions to find the suppliers ID (sid) who supply auto parts of both the 'Red' and 'Black' colors.

Options :

6406531286088. ✗ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie catalog)) \wedge \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

6406531286089. ✗ $\Pi_{sid}(\sigma_{color='Red' \wedge color='Black'}(auto\_part \bowtie catalog))$

6406531286090. ✓ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie catalog)) \cap \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

6406531286091. ✗ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie auto\_suppliers)) \cup \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie auto\_suppliers))$

6406531286092. ✗ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie auto\_suppliers)) \cap \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

Question Number : 78 Question Id : 640653386726 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the following relations:
auto_part($\underline{pid}, pname, color$)
auto_suppliers($\underline{sid}, sname, location$)
catalog($\underline{pid, sid}, price$)

TRC

1. $\{x \mid \exists s \in auto\_suppliers\ \exists c \in catalog\ \exists p \in auto\_part(s.location = `Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge x.pname = p.pname \wedge s.sid = c.sid \wedge p.pid = c.pid)\}$
2. $\{x \mid \exists p \in auto\_parts\ \exists c \in catalog(p.pname = `Suspension' \wedge c.price = 5000 \wedge x.pid = p.pid \wedge p.pid = c.pid)\}$
3. $\{x \mid \exists p \in auto\_parts\ \exists c \in catalog\ \exists s \in auto\_suppliers(p.pname = `Suspension' \wedge c.price = 5000 \wedge x.pid = p.pid \wedge x.sname = s.sname \wedge p.pid = c.pid \wedge s.sid = c.sid)\}$
4. $\{x \mid \exists s \in auto\_suppliers\ \exists c \in catalog(s.location = `Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge s.sid = c.sid)\}$

DRC

a. $\{< m > \mid \exists m,n,o(< m,n,o > \in auto\_parts \wedge n = `Suspension') \wedge \exists a,b,c(< a,b,c > \in catalog \wedge c = 5000 \wedge m = a)\}$

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

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

d. $\{< m > \mid (< m,n,o > \in auto\_parts \wedge n = `Suspension') \wedge (< a,b,c > \in catalog \wedge c = 5000 \wedge m = a)\}$

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

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

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

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

Match the TRC expression to its correct equivalent DRC expression.

Options :

6406531286093. ✖ 1-e, 2-d, 3-f, 4-c

6406531286094. ✔ 1-e, 2-a, 3-f, 4-b

6406531286095. ✖ 1-g, 2-a, 3-h, 4-b

6406531286096. ✖ 1-g, 2-d, 3-h, 4-c

Sub-Section Number : 7

Sub-Section Id : 64065355346

Question Shuffling Allowed : Yes

Question Number : 79 Question Id : 640653386722 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 Table 1 and predict the output of the query that follows.

id	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000.00
12121	Wu	Finance	90000.00
15151	Mozart	Music	40000.00
22222	Einstein	Physics	95000.00
32343	El Said	History	60000.00
33456	Gold	Physics	87000.00
45565	Katz	Comp. Sci.	75000.00
58583	Califieri	History	62000.00
76543	Singh	Finance	80000.00
76766	Crick	Biology	72000.00
83821	Brandt	Comp. Sci.	92000.00
98345	Kim	Elec. Eng.	80000.00

Table 1: **instructor**

```
SELECT COUNT(*) FROM instructor AS a
WHERE a.salary > SOME(SELECT b.salary
                 FROM instructor AS b
                 where b.dept_name='Biology')
AND a.salary  >  ALL(SELECT c.salary
                 FROM instructor AS c
                 WHERE c.dept_name='Accountancy');
```

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number :	8
Sub-Section Id :	64065355347
Question Shuffling Allowed :	Yes

Question Number : 80 Question Id : 640653386724 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 following relations as shown in Table 2 and Table 3

shop_no	name
SH01	Tea stall
SH02	Modern Store
SH03	Balaji Store
SH04	Modern Store

Table 2: **Shop**

shop_no	item_name	price
SH01	Sugar	200
SH01	Tea leaf	500
SH02	Cookies	800
SH02	Namkeen	400
SH03	Mustard oil	700
SH04	Cookies	500

Table 3: **Shop_order**

```
SELECT name,AVG(price)
FROM Shop
NATURAL JOIN
Shop_order
GROUP BY name
HAVING AVG(price)>400
```

The number of tuples returned by the above SQL query.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

PDSA

Section Id :	64065323902
Section Number :	6
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 :	64065355348
Question Shuffling Allowed :	No

Question Number : 81 Question Id : 640653386735 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?
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 :

6406531286129. ✔ YES

6406531286130. ✖ NO

Sub-Section Number :	2