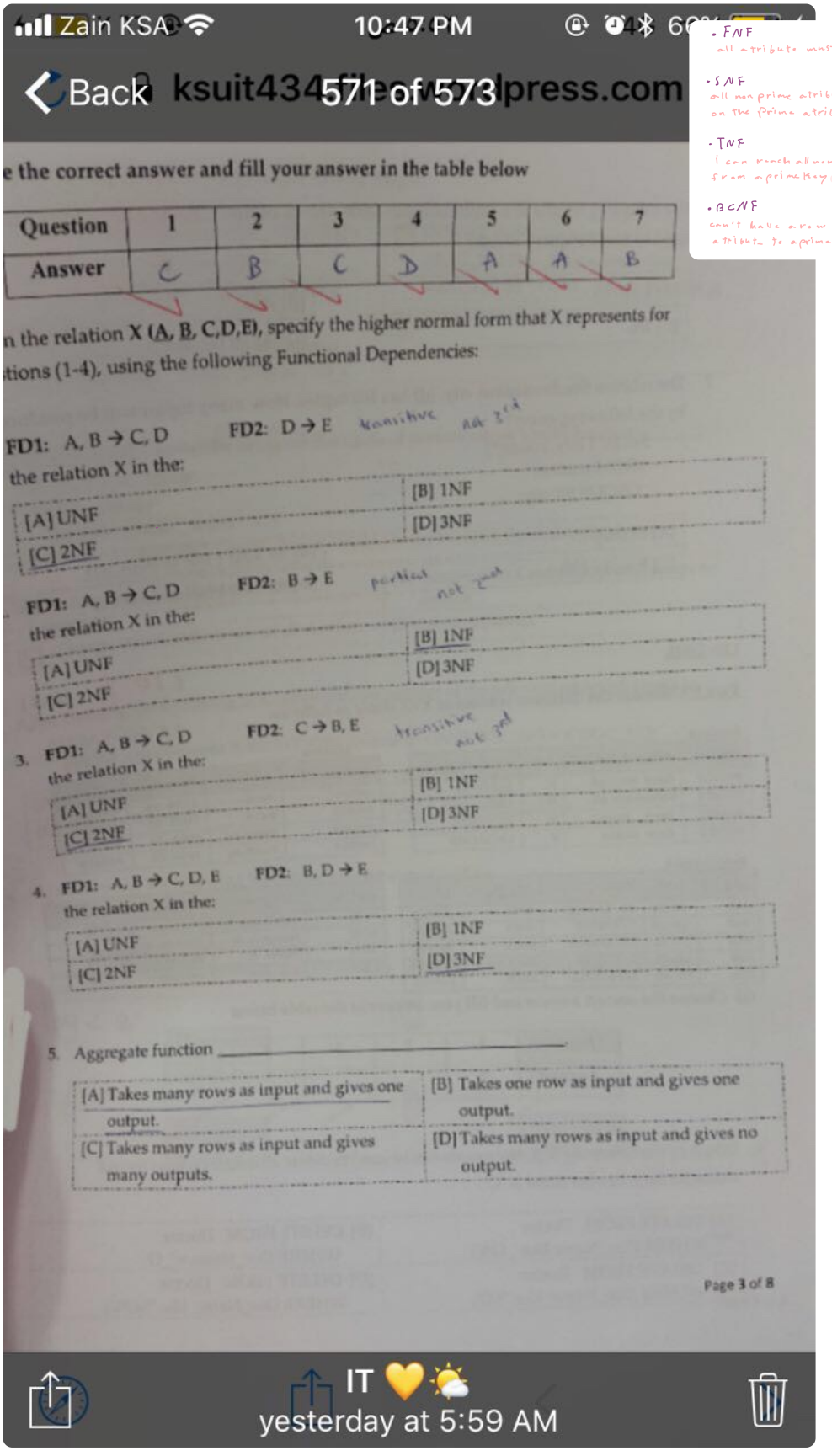
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e the correct answer and fill your answer in the table below
Question 1 2 3 4 5 6 7
Answer C B C D A A B
n the relation X (A, B, C,D,E), specify the higher normal form that X represents for
tions (1-4), using the following Functional Dependencies:
FD1: A, B → C, D FD2: D → E
the relation X in the:
[A] UNF
[B] 1NF
[C] 2NF
[D] 3NF
FD1: A, B → C, D FD2: B → E
the relation X in the:
[A] UNF
[B] 1NF
[C] 2NF
[D] 3NF
3. FD1: A, B → C, D FD2: C → B, E
the relation X in the:
[A] UNF
[B] 1NF
[C] 2NF
[D] 3NF
4. FD1: A, B → C, D, E FD2: B, D → E
the relation X in the:
[A] UNF
[B] 1NF
[C] 2NF
[D] 3NF
5. Aggregate function _____
[A] Takes many rows as input and gives one output.
[B] Takes one row as input and gives one output.
[C] Takes many rows as input and gives many outputs.
[D] Takes many rows as input and gives no output.
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6. If a subquery results in a multi-column table, which of the following keywords can be used to test the query result?

[A] EXISTS.	[B] ALL.
[C] IN.	[D] All of the above.

7. The relation **Student**(name, city, id) has 100 tuples. How many tuples will be produced by the following query?

```
SELECT city, count(*)
FROM student
GROUP BY city;
```

[A] Exactly 1.	[B] At least 1 but at most 100.
[C] Exactly 100.	[D] At least 1 but at most 50.

Q2: DML

[10.5 / 10.5]

Part 1: Consider the database schema of XYZ clinic as follows:

Patient

PNO	Patient_Name	Sex	Date_of_Birth
P00925	Sara Khalid	F	1/1/2001
P00926	Mohammed Ali	M	23/12/1985
P00927	Saud Ahmed	M	12/4/2005
P00928	Sara Jasim	F	19/3/1989

Invoice

Invoice No	Status	Amount	PNO
INV001	Paid	3004.65	P00925
INV002	Paid	1000.00	P00926
INV003	Pending	6000.50	P00927
INV004	Pending	5000.00	P00925

Appointment

App_NO	Time	Date	DOC_NO	PNO
001	08:00	29/1/2012	D001	P00925
002	10:15	1/3/2012	D001	P00926
003	17:30	23/3/2012	D001	P00927
004	16:00	1/4/2012	D004	P00928
005	19:00	12/4/2012	D003	P00925

Doctor

DOC_NO	Doc_Name	Specialist	Credit _hours
D001	Mohammed T	Dentist	70
D002	Mostafa M.	Internist	85
D003	Jalal K	Pediatrician	65
D004	Ali Sam	Dentist	55

(a) Choose the correct answer and fill your answer in the table below 2.5

Question	1	2	3	4	5
Answer	A	D	C	D	A

1. Which of the following SQL statements can be used to delete all doctors whose second character from her/his name is 'O':

[A] DELETE FROM Doctor WHERE Doc_Name like '_O%';	[B] DELETE FROM Doctor WHERE Doc_Name = '_O';
[C] DELETE FROM Doctor WHERE Doc_Name like '%O';	[D] DELETE FROM Doctor WHERE Doc_Name like '%O%';

2. Which one of the following SQL statements is illegal :

[A] INSERT INTO Doctor (DOC_NO,Credit _hours, Specialist, Doc_Name) VALUES('D005','66','Dentist', 'Seed');	[B] INSERT INTO Doctor (Credit _hours ,DOC_NO,Doc_Name,Specialist) VALUES('66' ,'D005', 'Seed', 'Dentist');
[C] INSERT INTO Doctor (DOC_NO, Doc_Name, Specialist, Credit _hours) VALUES('D005', 'Seed', 'Dentist', '66');	[D] INSERT INTO Doctor

3. The following SQL statement retrieves the name of doctors whose Credit hours is _____ :

```
SELECT Doc_Name
FROM   Doctor
  WHERE Credit _hours> ALL
        (SELECT Credit _hours FROM Doctor WHERE Specialist='Dentists');
```

[A] Greater than Credit hours of some dentists.	[B] Greater than Credit hours of at least one dentist.
[C] Greater than Credit hours of all dentists.	[D] None of Above.

4. After running the following SQL statement, the number of the selected(retrieved) rows is :

```
SELECT D.*, A.*
  FROM Appointment A RIGHT JOIN Doctor D ON D.DOC_NO = A.DOC_NO;
```

[A] 2 Rows Selected	[B] 4 Rows Selected
[C] 5 Rows Selected	[D] 6 Rows Selected

5. After running the following SQL statement, the output will be:

```
SELECT    PNO
  FROM      Patient M
  WHERE     NOT EXISTS
    ( SELECT * From Invoice IN WHERE M.PNO=IN.PNO  AND Status='Pending');
```

[A]

PNO
P00926
P00928

[B]

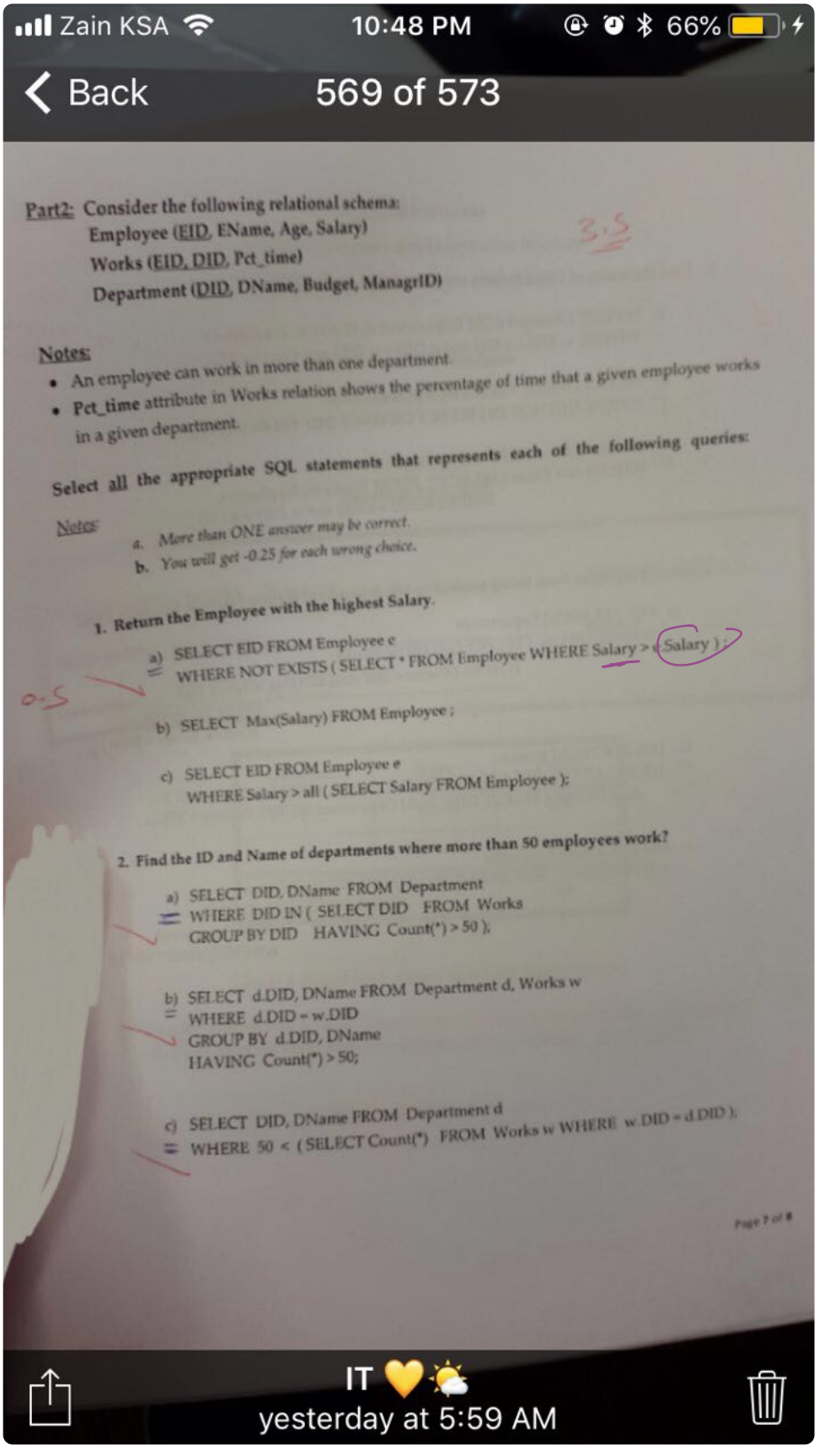
PNO
P00925
P00927

[C]

PNO
P00927

[D]

PNO
P00928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Part2: Consider the following relational schema:
Employee (EID, EName, Age, Salary)
Works (EID, DID, Pct_time)
Department (DID, DName, Budget, ManagrID)
Notes:
An employee can work in more than one department.
Pct_time attribute in Works relation shows the percentage of time that a given employee works in a given department.
Select all the appropriate SQL statements that represents each of the following queries:
Notes:
a. More than ONE answer may be correct.
b. You will get -0.25 for each wrong choice.
1. Return the Employee with the highest Salary.
a) SELECT EID FROM Employee e
WHERE NOT EXISTS (SELECT * FROM Employee WHERE Salary > e.Salary) ;
b) SELECT Max(Salary) FROM Employee ;
c) SELECT EID FROM Employee e
WHERE Salary > all (SELECT Salary FROM Employee);
2. Find the ID and Name of departments where more than 50 employees work?
a) SELECT DID, DName FROM Department
WHERE DID IN (SELECT DID FROM Works
GROUP BY DID HAVING Count(*) > 50);
b) SELECT d.DID, DName FROM Department d, Works w
WHERE d.DID = w.DID
GROUP BY d.DID, DName
HAVING Count(*) > 50;
c) SELECT DID, DName FROM Department d
WHERE 50 < (SELECT Count(*) FROM Works w WHERE w.DID = d.DID);
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Find the name of Departments where no employees work?

a) SELECT DName FROM Department d, Works w, Employee e
WHERE w.EID = e.EID and d.DID = w.DID and Count(e.EID) = 0;

b) SELECT DName FROM Department
WHERE DID NOT IN (SELECT DISTINCT DID FROM Works);

c) SELECT DName FROM Department d
WHERE Not Exists (SELECT * FROM Works w, Employee e
WHERE w.EID = e.EID and w.DID = d.DID);

. Remove Employee from being worked in HR department if their Salary is less than 5000.

a) DELETE FROM Department
WHERE DID IN (SELECT DID FROM Works
WHERE DName = 'HR' And EID IN (SELECT EID
FROM Employee
WHERE Salary < 5000));

b) DELETE FROM Works
WHERE EID IN (SELECT EID FROM Employee WHERE Salary < 5000)
And DID IN (SELECT DID FROM Department WHERE DName = 'HR');

c) DELETE FROM Employee
WHERE Salary < 5000 And EID IN (SELECT EID FROM Works
WHERE DID IN (SELECT DID
FROM Department
WHERE DName = 'HR'));

4.3

Write the appropriate SQL statements that represents each of the following queries

Retrieve the names of patients that have invoice's amount greater than SR 5000...

```
SELECT Patient_Name
FROM Patient
WHERE PNO IN ( SELECT PNO
               FROM Invoice
               WHERE Amount > 5000.00 );
```

2. For each invoice status, retrieve the number of invoices and the total amount .

```
SELECT Status, COUNT (Status) As NumberOfInvoices, SUM (Amount) As Total
FROM Invoice
GROUP BY Status ;
```

4.5

3. Cancell all the appointemnts for doctor Jalal K

```
DELETE FROM Appointment
WHERE DOC_NO = ( SELECT DOC_NO
                 FROM Doctor
                 WHERE Doc_Name = 'Jalal K' );
```