Exam 1

Q1 True/False [Correct: +1, Wrong: -0.5 — Total 4 marks]

[FALSE]

[TRUE]

[TRUE]

[FALSE]

Q 2. Relational Algebra [3 + 3 = 6 marks]

[3 marks] $\Pi_{title,\, year}(\sigma_{year=2005}(Papers))$

[3 marks]

$\Pi_{Authors.name}(\sigma_{Papers.venue='SIGMOD'}(Papers \bowtie_{Papers.pid=Authoring.paperid} Authoring \bowtie_{Authoring.authorid=Authors.aid} Authors))$

$\Pi_{name}(\sigma_{venue='SIGMOD'}(Papers \bowtie_{Papers.pid=Authoring.paperid} Authoring \bowtie_{Authoring.authorid=Authors.aid} Authors))$

$\Pi_{name}(\sigma_{venue='SIGMOD'}(Papers \bowtie Authoring \bowtie Authors))$ **(2 marks)**

Q3. SQL [3 + 3 + 3 + 3 = 12 marks]

[3 marks]

SELECT COUNT(*) FROM Papers WHERE venue = ‘VLDB’;

[3 marks]

SELECT AVG(year) FROM Papers WHERE title LIKE '%Skyline%' OR title LIKE '%skyline%';

SELECT AVG(year) FROM Papers WHERE title LIKE '%Skyline%';

SELECT AVG(year) FROM Papers WHERE title = '%Skyline%'; **(1 mark)**

SELECT AVG(year) FROM Papers WHERE title = 'Skyline'; **(1 mark)**

[3 marks]

SELECT Papers.pid, Papers.title, COUNT(*)

FROM Papers, Authoring

WHERE Papers.pid=Authoring.paperid

GROUP BY Papers.pid, Papers.title; **(1 mark if group by done using only one of the attribute)**

SELECT Papers.pid, Papers.title, COUNT(Authoring.authorid)

FROM Papers, Authoring

```
WHERE Papers.pid=Authoring.paperid
GROUP BY Papers.pid, Papers.title;

SELECT pid, title, COUNT(*)
FROM Papers, Authoring
WHERE pid=paperid
GROUP BY pid,title;
```

There are other possible answers as well using subquery.

[3 marks]

```
SELECT Authoring.authorid, SUM(Papers.n_citation)
FROM Papers, Authoring
WHERE Papers.pid = Authoring.paperid
GROUP BY Authoring.aid;

SELECT aid, name, SUM (n_citation)
FROM Papers, (SELECT * FROM Authors, Authoring WHERE aid = authorid)
WHERE pid = paperid
GROUP BY aid;

SELECT aid, SUM(n_citation)
FROM Authors, (SELECT * FROM Papers, Authoring WHERE pid = paperid)
WHERE aid = authorid
GROUP BY aid;

SELECT aid, SUM(n_citation)
FROM Papers, Authors, Authoring
WHERE pid = paperid, aid = authorid
GROUP BY aid;
```

Q 4. [3 marks]

Output: Y=31, No explanation: (-2)

```
X Y
-------
1 1
2 3
3 7
4 15
5 31
```

Exam 2

Q1. (5,2), (7,2), (9,5) **(3 marks)**

Q2. 3 **(1 marks)**
Strong entities E1 and E2 are represented as separate tables. In addition to that many-to-many relationships(R2) must be converted as separate table by having primary keys of E1 and E2 as foreign keys. One-to-many relationship (R1) must be transferred to 'many' side table(i.e. E2) by having primary key of one side(E1) as foreign key(this way we need not to make a separate table for R1). **(2 marks)**

Q3.
Schema 1 **(2 marks)**
Actor (aid, name)
Movie(mid, name, year)
Stars (aid, mid)

Schema 2 **(2 marks)**
Actor (aid, name)
Movie (mid, name, year, aid)

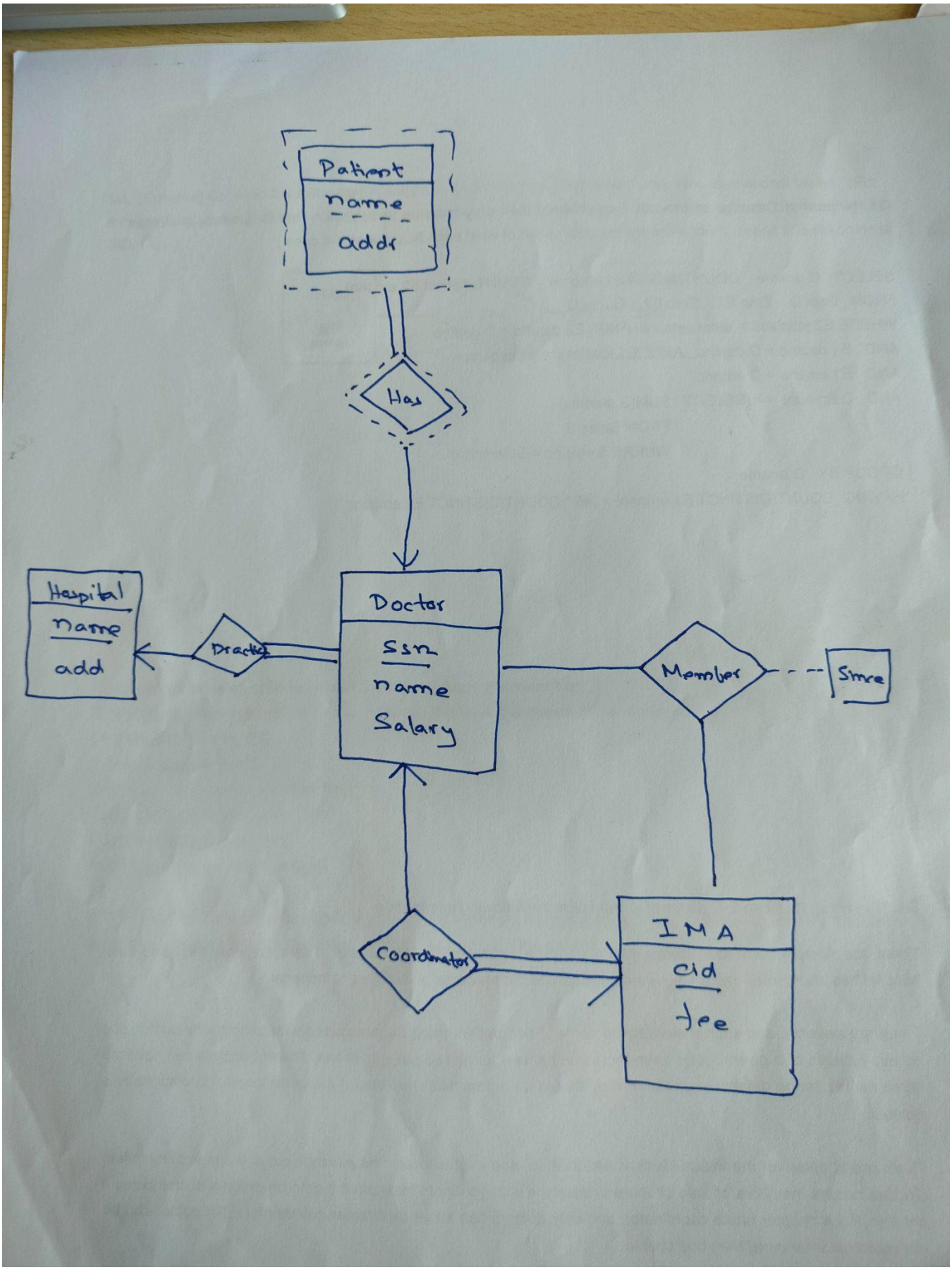
Q4.

```
SELECT S.sname, H.loc
FROM  Supplier S, Shipment H
WHERE S. snum = H.snum
GROUPBY  S.snum, S,sname, H.loc
HAVING COUNT(H.pnum) > 10
```

There are other possible answers as well.

Q5.
For departments where more than 45% of the salespersons meet or exceed their quota, print name of department, count of salespersons in the department meeting or exceeding their quota, and count of all salespersons in the department.

Q6.


Patient
name
addr
Has
Hospital
name
add
Practice
Doctor
Ssn
name
Salary
Member
Since
Coordinator
IMA
cid
fee