Q1) Write down SQL queries for the following relational algebra expressions:

1 - σ(Dno=5 AND Salary>30000) (EMPLOYEE)
Ans-

```
SELECT *
FROM EMPLOYEE
WHERE Dno = 5 AND Salary > 30000;
```

2-πFname, Lname, Salary(σDno=5(EMPLOYEE))
Ans-

```
SELECT Fname, Lname, Salary
FROM EMPLOYEE
WHERE Dno = 5;
```

3-
1-SMITH←σFname='John' AND Lname='Smith'(EMPLOYEE)
2-SMITH_PNOS ← πPno(WORKS_ON ∞Essn=SsnSMITH)
3-SSN_PNOS ← πEssn, Pno(WORKS_ON)
4-SSNS(Ssn) ← SSN_PNOS ÷ SMITH_PNOS
5-RESULT ← πFname, Lname(SSNS * EMPLOYEE)
Ans-
1-

```
SELECT *
FROM EMPLOYEE
WHERE Fname = 'John' AND Lname = 'Smith';
```

Result >>>>> SMITH
2-

```
SELECT Pno
FROM WORKS_ON
WHERE Essn IN (SELECT Ssn FROM EMPLOYEE WHERE Fname = 'John' AND Lname = 'Smith');
```

Result >>>>> SMITH_PNOS
3-

```
SELECT Essn, Pno
FROM WORKS_ON;
```

Result >>>>> SSN_PNOS

4-

```sql
SELECT ssn
FROM SSN_PNOS
WHERE ssn IN (SELECT Ssn FROM SMITH)
INTERSECT
SELECT Ssn
FROM SMITH_PNOS;
```

Result >>>>> SSNS(Ssn)

5-

```sql
SELECT Fname, Lname
FROM EMPLOYEE
WHERE SSN IN (SELECT Ssn FROM SSNS);
```

Result >>>>> RESULT

-: Q2) For the following relational schema write the SQL Queries
EMPLOYEE (FNAME, LNAME, SSN, BDATE, ADDRESS, SEX, SALARY, #SUPERSSN,
(DNO#
DEPARTMENT (DNAME, DNUMBER, #MGRSSN, MGRSTARTDATE)
PROJECT (PNAME, PNUMBER, PLOCATION, #DNUM)
A) Retrieve the birthdate and address of the employee(s) whose name is John Smith
trieve the name and address of all employees who work for the Research departmentB) Re
C) For every project located in 'Stafford', list the project number, the controlling department
number and thedepartment manager's last name, address and birthdate
h department that has more than five employees, retrieve the department number D) For eac
and the number of itsemployees who are making more than £40.000

Ans-

A-

```sql
SELECT BDATE, ADDRESS
FROM EMPLOYEE
WHERE FNAME = 'John' AND LNAME = 'Smith';
```

B-

```sql
SELECT FNAME, LNAME, ADDRESS
FROM EMPLOYEE
WHERE DNO IN (SELECT DNUMBER FROM DEPARTMENT WHERE DNAME = 'Research');
```

C-

```sql
SELECT PNUMBER, PNAME, DNUMBER, LNAME, ADDRESS, BDATE
FROM PROJECT
JOIN DEPARTMENT ON PROJECT.DNUM = DEPARTMENT.DNUMBER
JOIN EMPLOYEE ON DEPARTMENT.MGRSSN = EMPLOYEE.SSN
WHERE PLOCATION = 'Stafford';
```

D-

```sql
SELECT DNo, COUNT(*) AS EMPLOYEE_COUNT
FROM EMPLOYEE
WHERE SALARY > 40009
GROUP BY DNO
HAVING COUNT(*) > 5;
```