Provide SQL queries for following:

a. list the titles of all books that are checked out.

SELECT title FROM book b INNER JOIN checkout c ON b.ISBN = c.ISBN where c.returned = false;

b. What employees have checked out and returned the book “SQL tricks”?

SELECT e.f_name, e.l_name FROM employee e INNER JOIN checkout c ON e.emp_id = c.emp_id INNER JOIN book b ON c.ISBN = b.ISBN where b.title = 'SQL Tricks' AND returned = true;

c. Find the book ISBN and title with the largest number of checkouts

SELECT b.title FROM books b INNER JOIN checkout c ON b.ISBN = c.ISBN GROUP BY b.ISBN ORDER BY COUNT(c.returned) DESC LIMIT 1;

PART II

Normalized Structure:

Students (StudentID, FirstName, LastName)
Courses (CourseID, CourseName)
Enrolment (StudentID, CourseID, Grade)
Grade (Grade, Grade_Value)

3. Find the number of students in CSE 3330.

If you assume CSE 3330 is CourseID:
SELECT COUNT(StudentID) FROM Enrolment WHERE CourseID = 'CSE 3330'

If you assume CSE 3330 is CourseName:
SELECT COUNT(e.StudentID) FROM Enrolment e INNER JOIN Courses c ON e.CourseID = c.CourseID WHERE c.CourseName = 'CSE 3330'

4. Find the average grade value of students with the last name ‘Smith’

SELECT AVG(g.Grade_Value) FROM Grade g INNER JOIN Enrolment e ON g.Grade = e.Grade INNER JOIN Students s ON e.StudentID = s.StudentID WHERE s.LastName = 'Smith'
5. Find the course with the highest enrolment i.e. the maximum number of students.

```
SELECT c.CourseName FROM Courses c INNER JOIN Enrolment e on c.CourseID=e.CourseID GROUP BY c.CourseID ORDER BY COUNT(e.StudentID) DESC LIMIT 1;
```

6. Give a list of all courses in which the student ‘Alex Cheng’ is enrolled in.

```
SELECT c.CourseName FROM Courses c INNER JOIN Enrolment e ON c.CourseID=e.CourseID INNER JOIN Students s ON e.StudentID = s.StudentID WHERE s.FirstName='Alex' AND s.LastName='Cheng';
```

7. Create a list of courses and their grade distribution as follows:

```
SELECT c.CourseName, e.Grade, COUNT(e.Grade) FROM Courses c INNER JOIN Enrolment e ON c.CourseID=e.CourseID GROUP BY c.CourseName, e.Grade;
```