NAME: _____ (FIRST NAME FIRST) **SCORE:** _____

COSC 6340 REVIEW QUESTIONS MAY 4, 2015

THE SECOND QUIZ WILL BE CLOSED BOOK. YOU WILL BE ALLOWED **ONE** SHEET (**TWO** PAGES) OF NOTES.

1. Consider the two following transaction schedules and explain why they are or are not serializable and in which order: (2×10 points)

a) r1(A); r2(B); w1(A); r3(A); w2(B); w3(A); r1(B); w1(B);

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b) r1(A); r2(A); w1(A); w2(A); w2(C); r1(B); w1(B)

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2. In the UNDO approach for managing transactions,

a) When can the <COMMIT> record be written to disk? (10 easy points)

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b) Why? (10 points) _____

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3. Consider the two tables EMPLOYEE (EID, ENAME, ESALARY, EPLANTID, ….) and PLANT (PLANTID, PNAME, PCITY, PSTATE) where:

- EID is the unique ID of an employee, ENAME, his of her full name, ESALARY, his or her salary, EPLANTID the unique ID of the plant where he or she is working, …
- PLANTID the unique ID of a plant PNAME located in PCITY in PSTATE, …

and the following SQL query:

```
SELECT ENAME, ESALARY
FROM EMPLOYEE, PLANT
WHERE EPLANTID = PLANTID AND ESALARY > 300000 AND PSTATE = "NM"
```

a) What would be your ***naïve*** execution plan for this request? (10 points)
(***Hint:*** *define at each step a temporary table.*)

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b) What would be a better execution plan? (10 points)

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c) What would change in your plan if the query WHERE clause was: (10 points)

```
WHERE EPLANTID = PLANTID AND ESALARY < 300000 AND PSTATE = "NM"
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4. What does two-phase locking require? (5 points)

Name a special case where two-phase locking is replaced by less stringent conditions. (5 points)

5. Consider two transactions T_1 and T_2 that read and update the same entity A. Assume that T_1 tries to update A while we have **$TS(T_1) \geq RT(A)$**, **$TS(T_1) \geq WT(A)$**, and **$C(A) = 0$**

What should the scheduler do? (5 points)

Why? (5 points)

6. Explain why the wound-wait scheme eliminates all potential deadlocks (10 points)