



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA
SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: CE 280

COURSE NAME: ADVANCED DATABASE SYSTEMS

CLASS: CE II

TIME: 2HRS 30MINS

Name: _____ Index Number: _____

Instructions: This paper has two (2) SECTIONS: A and B respectively. Answer Section A (compulsory) and any other 2 in SECTION B. Answer all questions in your answer booklet.

SECTION A (Compulsory)

QUESTION 1

- a. With the help of a suitable example, briefly explain the concept of Parallel Processing and why it is usually adopted as opposed to Serial Processing.
- b. Explain briefly the main measures of performance of a database system.
- c. With the help of a diagram, describe the types of parallel databases architectures.
- d. Define the following terms used in Parallel Databases
 - i. Load Balancing
 - ii. Communication Overhead
 - iii. Cache Coherence
 - iv. Speed-up
 - v. Scale-up
- e. Why is the top level of the Hierarchical Architecture a Shared-Nothing Architecture?
- f. A task of size 500 GB take 720 s to complete on a workstation of 16 G memory and a disk capacity of 2 TB. What is Processing Time in Parallel required for the same task to be completed in Speed up of 144 when broke down into 5 evenly tasks for 5 workstations of the same capacity?
- g. Give two (2) advantages and disadvantages of Parallel Database System.
- h. Explain briefly any two (2) of the following Query Parallelism techniques
 - i. I/O parallelism
 - ii. Interquery parallelism
 - iii. Intraquery parallelism
 - iv. Intraoperation parallelism
 - v. Interoperation parallelism

SECTION B

Instructions: Answer any other two (2) questions from this section

QUESTION 2

Use Figure 1 to answer the following questions below.

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	{null}	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	{null}	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	{null}	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	{null}	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	{null}	20
9	7839	KING	PRESIDENT	{null}	17-NOV-81	5000	{null}	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1100	{null}	20
12	7900	JAMES	CLERK	7698	03-DEC-81	950	{null}	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3000	{null}	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1300	{null}	10

Figure 1: Employee Table

Write SQL statement:

- a. to list all the types of jobs except SALESMAN in the below.
- b. to list all SALESMAN and sort by HIREDATE.
- c. to update EMPNO = 7360 with new information of your choice.
- d. to delete EMPNO =7521

QUESTION 3

- a. With the aid of a diagram describe a Distributed Database.
- b. Distinguish between Parallel Database and Distributed Database.
- c. What are the main properties of Distributed Databases?
- d. Write short notes on Data Fragmentation and explain the types available

QUESTION 4

- a. What is Oracle?
- b. Briefly explain the types of Oracle Engineered Systems as released by Oracle when the acquired Sun Microsystems.
- c. Hardware virtualization can be define in two (2) main categories. Distinguish between them.
- d. What are the components of Instance and Database in the Oracle environment?
- e. What does it meant o say SQL is a Fourth Generation Language (4GL)?
- f. SQL is classified into sub-languages. List them. What are the statements used in them.

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