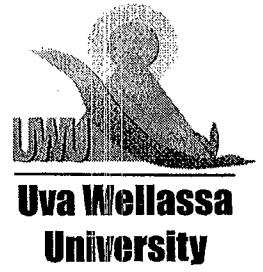


Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
300 level 1st Semester Examination – May/July 2017
CST325-2 Advanced Database Management Systems



Instructions to candidates

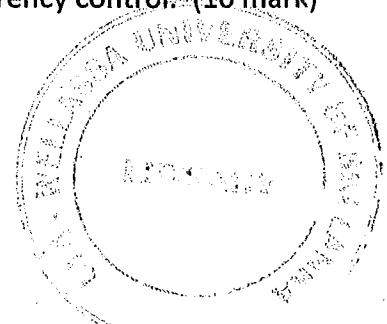
Duration: Two (02) hours

Number of questions: Four (04)

Answer all questions

Mark allocation: 100

1.
 - a. Explain how to increase performance and reliability using redundant array of independent disks (RAID) technology. (5 mark)
 - b. Differentiate primary index and secondary index. (5 mark)
 - c. Describe how to use multilevel index when primary index does not fit in memory. (5 mark)
 - d. Discuss advantages and disadvantages of B-tree index file. (5 mark)
 - e. Explain Bitmap index using an example. (5 mark)
2.
 - a. Explain Atomicity, Consistency, Isolation and Durability properties according to a transaction. (8 mark)
 - b. Depict and describe transaction states. (10 mark)
 - c. Describe the use of precedence graph for testing conflict serializability. (7 mark)
3.
 - a. Explain an advantage of two-phase locking protocol. (5 mark)
 - b. Describe the mechanism of lock manager of locking protocols for transactions by illustrating a sample Lock Table. (10 mark)
 - c. How to work Multiple Granularity Locking Scheme in concurrency control. (10 mark)



4.

- a. Illustrate the basic steps of query processing hierarchy. (5 mark)
- b. Describe the main steps of external sort-merge used in sorting of relations. (10 mark)
- c. Explain the process of Hash-Join applied in Equi-joins and Natural joins. (5 mark)
- d. Differentiate Materialization and Pipelining according to evaluation of SQL expressions. (5 mark)