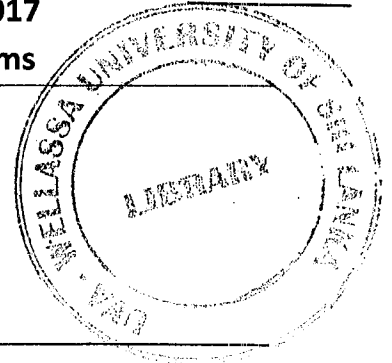
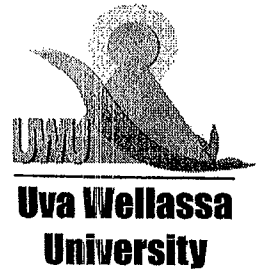


**Uva Wellassa University of Sri Lanka**  
**Faculty of Science and Technology**  
**Department of Computer Science and Technology**  
**400 level 1<sup>st</sup> Semester Examination – May/July 2017**  
**IIT411-2 Advanced Database Management Systems**



**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)