

B.Tech IV Year II Semester (R09) Regular &amp; Supplementary Examinations April 2016

**DATABASE MANAGEMENT SYSTEMS**

(Electronics and Control Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Outline the architecture of DBMS.  
(b) Indicate the need for database detailing the advantages of file systems.
- 2 (a) Design a database for maintaining the sales data of a super market where each customer purchase different products. Maintain the details, customer personal details such as income, age, sex and different items purchased etc.,  
(b) Draw the ER diagram for university data showing both strong and weak entities.
- 3 Given the following relational schema:  
Emp(eid: integer, ename: string, age: integer, salary: real)  
Dept(did: integer, budget: real, managerid: integer)  
(i) List using an SQL query the names and ages of each employee who works in both hardware department and software department.  
(ii) List using an SQL query names of managers who manage the departments with the largest budgets.  
(iii) Show a relation with full functional dependency and partial functional dependency.
- 4 (a) Summarize different users of database.  
(b) Give an example of a foreign key constraint that involves the Dept relation, for the following relational schemas.  
Emp(eid: integer, ename: string, age: integer, salary : real)  
Works(eid: integer, did: integer, pertime: integer)  
Dept(did: integer, dname: string, budget: real, managerid: integer)  
Give the options for enforcing this constraint when a user attempts to delete a Dept tuple stating primary and foreign key integrity constraints.
- 5 (a) Illustrate how such relation can be put in II normal form.  
(b) Show a relation with full functional dependency and transitive dependency. Illustrate how such relation can be put in III normal form.
- 6 (a) Interpret ACID properties atomicity, consistency, isolation and durability with examples.  
(b) Interpret the terms transaction, schedule, complete schedule and serial schedule.
- 7 (a) Compare the deferred modification and immediate modification version of the log-based recovery schemes in terms of ease of implementation and overhead cost.  
(b) When the system recovers from a crash it constructs an undo-list and a redo-list? Explain why log records for transactions on the undo-list must be processed in reverse order while those log records for transactions on the redo-list are processed in a forward direction.
- 8 (a) Build a B+ tree with order 3 inserting the following key values 23 11 15 1 3 7 22 15 44 67 4.  
(b) Build a hash function with an example to provide hash index.

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