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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **09CS201/12CS201/CS226/CS257/CS267** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **DATABASE SYSTEMS/ /INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | What is a database? | (1) |
| 2. | A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a statement requesting the retrieval of information | (1) |
| 3. | What is a Sub Query? | (1) |
| 4. | **Write an SQL query statement to count the number of rows in STUDENT table and display the result with the label NumStudents.** | (1) |
| 5. | Draw the E-R notation to represent the total participation of entity set in relationship set. | (1) |
| 6. | Identify the following notation in the E-R diagram. | (1) |
| 7. | Which is the most desirable normal forms that we can obtain? | (1) |
| 8. | What is lossless join property? | (1) |
| 9. | A B-tree of order m has maximum of \_\_\_\_\_\_\_\_\_\_\_\_\_ children. | (1) |
| 10. | List the two basic kinds of indices. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | Distinguish between file systems and database management systems. | (3) |
| 12 | What is a view? How it is related to data independence? | (3) |
| 13 | Construct the appropriate tables for the following E-R diagram. | (3) |
| 14 | What are anomalies? What are its types? How to solve them? | (3) |
| 15 | How will you ensure the integrity of the data? What are the transaction properties that the database system should maintain? | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | Describe in detail about the database Architecture with a neat diagram. | (10) |
| b. | Enumerate the duties of Database Administrator. | (5) |
| (OR) | | | |
| 17. | a. | What are the different kinds of outer join? Explain it with suitable example. | (9) |
| b. | Consider the following relational schema for bank database.  *Branch(bname, bcity, asserts)*  *Customer(cname, cstreet, ccity)*  *Account( accno,bname,balance)*  *Loan(lno,bname, amount)*  *Depositor(cname, accno)*  *Borrower (cname, lno)*  Write the following queries in **relational algebra**.   1. Find the names of all customers who have a loan and an account at bank. 2. Find the name of all customers who have a loan at the bank and the loan amount is greater than 90000. 3. Find all customers who have an account from at least the “Downtown” and the Uptown” branches. | (6) |
| 18. |  | Consider the following relational database:   *employee (person\_name, street, city)  works (person\_name, company\_name, salary)  company (company\_name, city)  manages (person\_name, manager\_name*  Write the queries for the following :   1. Find the names of all employees who work for “Safe and Trust Bank”. 2. Find the names, address and cities of residence of all employees. 3. Find the names of all employees in the database who do not work for “Safe and Trust bank”. 4. Give all managers a 10 per cent salary raise. 5. Delete all tuples in the works relation for employees of “Hopeful finance”. | (15) |
| (OR) | | | |
| 19. | a. | Give a detailed note on aggregate functions and set operations with the appropriate queries. | (10) |
| b. | Create a trigger for update of column salary in the employee table, which ensures that salary cannot be reduced. | (5) |
| 20. |  | Explain the Draw an ER diagram for the “College Database” that captures the following information. Clearly explain and indicate attributes, keys, the cardinality ratios and participation constraints:   * A college contains many departments * Each department can offer any number of courses * Many instructors can work in a department * An instructor can work only in one department * For each department there is a Head * An instructor can be head of only one department * Each instructor can take any number of courses * A course can be taken by only one instructor | (15) |
| (OR) | | | |
| 21. |  | Explain the transaction server process structure in detail with a neat block diagram. | (15) |
| 22. | a. | List the Armstrong’s axioms for functional dependencies. What do you understand by soundness and completeness of these axioms? | (10) |
|  | b. | Write short notes on   * Variable – length records * Organization of records in Files | (5) |
| (OR) | | | |
| 23. | a. | What is normalization? Why do we need normalization? Describe about the multi-valued dependencies and Fourth normal form with suitable example. | (5) |
| b. | Explain 2NF, 3NF and BCNF with example tables. | (10) |
| 24. | a. | Give a detailed description on transaction management and discuss the various transaction states. | (10) |
| b. | What are the ACID properties? Illustrate them through examples. | (5) |
| (OR) | | | |
| 25. | a. | Compare and contrast the ordered index and hash index. | (5) |
| b. | Explain in detail about the B + tree index files. | (10) |

ALL THE BEST