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**B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019**

Fourth Semester

**CS16402 – DATABASE MANAGEMENT SYSTEMS***(Common to CS and IT)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	<b>CO</b>	<b>RBT</b>
1. What is the role of a database administrator?	<b>1</b>	<b>U</b>
2. List any four aggregate functions in SQL.	<b>1</b>	<b>R</b>
3. What is meant by single-valued and multi-valued attribute?	<b>2</b>	<b>U</b>
4. Why certain functional dependencies are called trivial functional dependencies?	<b>2</b>	<b>U</b>
5. List ACID properties.	<b>3</b>	<b>R</b>
6. Write briefly the two modes of locking a data item.	<b>3</b>	<b>R</b>
7. Write the differences between B and B <sup>+</sup> tree.	<b>4</b>	<b>U</b>
8. List few advantages of dynamic hashing over static hashing technique.	<b>4</b>	<b>R</b>
9. Define horizontal fragmentation.	<b>5</b>	<b>R</b>
10. What are the advantages of a cloud database?	<b>5</b>	<b>U</b>

**PART B - (5 X16 = 80 Marks)**

11. (a) (i) Explain relational operators with suitable example. **(8)** **1** **U**  
(ii) How triggers are defined in SQL. **(8)** **1** **U**

**(OR)**

- (b) Explain with a neat diagram the various components of database system and its architecture. **(16)** **1** **U**
12. (a) Design a database for an airline system. The database must keep track of customers and their reservations, flights and their status, seat assignments on individual flights, and the schedule and routing of future flights. The design should include an E-R diagram, a set of relational schemas, and a list of constraints, including primary-key and foreign-key constraints. **(16)** **2** **U**

**(OR)**

- (b) Describe in detail why normalization is needed in designing a relational schema. With suitable example explain the normal forms of 1NF, 2NF, 3NF, 4NF and BCNF. Explain why 4NF normal form is more desirable than BCNF. **(16) 2 U**

13. (a) Explain two-phase locking protocols with examples. **(16) 3 U**

**(OR)**

- (b) (i) Draw and explain the various states of transaction. **(8) 3 U**  
(ii) Write short note on deadlock prevention and recovery mechanism. **(8) 3 U**

14. (a) How disk-organization techniques (RAID) improves the performance and reliability. With a neat sketch elaborate your answer. **(16) 4 U**

**(OR)**

- (b) With suitable example explain file structure and organization of records in a file. **(16) 4 U**

15. (a) Explain homogeneous and heterogeneous distributed database. **(16) 5 U**

**(OR)**

- (b) Sketch and explain the architecture of dataware-house and elaborate the design issues. **(16) 5 U**