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| **B. TECH.**  **FOURTH SEMESTER EXAMINATION, 2016-17**  **DATABASE MANAGEMENT SYSTEM** | | | | | | | | | | | | |
| Time : **3 Hours** | | | | Max. Marks : **60** | | | | | | | | |
| **Note :** **(i)** Attempt **ALL** questions.  **(ii)**  Choices are given in each question set. | | | | | | | | | | | | |
| **1.** Attempt any **Four** of the following questions: **3 x 4 = 12**  **(a)** What are the main differences between file processing system and a database management system?  **(b)** Differentiate between physical and logical data independence.  **(c)** Draw a diagram of database system architecture.  **(d)** What do you mean by entity and relationship in E-R model? Explain the difference between weak entity and a strong one.  **(e)** Distinguish between super key, candidate key and primary key with an example.  **(f)** Define the concept of specialization and generalization with example.  **2.** Attempt any **Four** of the following questions: **3 x 4 = 12**  **(a)** In view of relational algebra define the following operations:  **(i)** Cartesian Product  **(ii)** Select  **(b)** Explain various integrity rules in relationship data model. | | | | | | | | | | | | |
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| **(c)** Consider the following table:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **P** |  |  |  | **Q** |  |  | | **A** | **B** | **C** |  | **A** | **B** | **C** | | a | b | c |  | c | b | a | | b | c | a |  | b | a | c | | c | a | b |  | b | c | a |   Perform the following relational algebra operation:  **(i)** P∪Q  **(ii)** P∩Q  **(iii)** P-Q and Q-P  **(d)** Employee (employee\_name, street, city)  Works (employee\_name, company\_name, salary)  Company (company\_name, city)  Managers (employee\_name, manager\_name)  Consider the relational scheme given above and construct the following SQL queries for this:  **(i)** Find the name of all employees, who live in the same city and on the same street as do their managers.  **(ii)** Find the maximum salary paid by every company.  **(iii)** Give all managers a 10% salary rise.  **(e)** Give SQL commands for:  **(i)** Modifying records in a table  **(ii)** Modifying schema of the table  **(f)** Explain advantages of cursors with suitable example.  **3.** Attempt any **Two** of the following questions: **6 x 2 = 12**  **(a)** Given a relation R(ABCDEF) with the set F={A→CE, B→D, C→ADE, BD→F}. Find the minimal cover of F. |  | **(b)** What is join dependency? How it is different from multi valued and functional dependency? Give an example of join and multi valued dependency.  **(c)** Consider a relation R(ABCDEFHIJ) with the set F={AB→C, A→D, B→H, D→EF, H→IJ}.  **(i)** Find the key of R.  **(ii)** Normalize R.  **4.** Attempt any **Two** of the following questions: **6 x 2 = 12**  **(a)** Define transactions. What do you understand by Serializibility of Schedules? Give rules for conflict Serializibility.  **(b)** Define the following terms:  **(i)** Log Based Recovery  **(ii)** Static Hashing  **(c)** What is deadlock? When does it occur? How it is detected in database system? How can it be avoided? Discuss in detail.  **5.** Attempt any **Two** of the following questions: **6 x 2 = 12**  **(a)** Give the time stamping protocols for concurrency control.  **(b)** What do you mean by multiple granularity? Discuss with suitable example. Also discuss validation based protocols with suitable example.  **(c)** Define Two-Phase locking. Describe with the help of an example. Will Two-Phase locking result in deadlock? Justify your answer. |
| **2** |  | **3** |