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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – April/May – 2017**

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| **Code :** | **14CS3005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED DATABASE SYSTEMS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Describe three techniques commonly used when developing algorithms for relational operators. | CO1 | 6 |
| b. | Explain how these techniques can be used to design algorithms for the selection, projection, and join operators. | CO1 | 14 |
| (OR) | | | | |
| 2. | a. | Discuss about Strict Two-Phase locking. Give an example. | CO3 | 5 |
| b. | Is the following schedule serializable? If it is not, what is the first operation that makes it non-serializable?   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **No** | **T1** | **T2** | **T3** | **T4** | **T5** | | 1 | R(r) |  |  |  |  | | 2 |  | R(s) |  |  |  | | 3 | W(u) |  |  |  |  | | 4 |  |  |  | R(t) |  | | 5 |  |  |  |  | W(r) | | 6 |  | R(u) |  |  |  | | 7 |  | W(u) |  |  |  | | 8 |  |  | R(v) |  |  | | 9 |  | R(v) |  |  |  | | 10 |  |  |  |  | W(r) | | 11 |  |  | R(u) |  |  | | 12 |  |  |  |  | W(u) | | 13 |  |  |  | R(r) |  | | 14 |  |  |  |  | R(v) | | 15 |  |  |  |  | W(r) | | 16 |  | R(u) |  |  |  | | CO3 | 10 |
| c. | Describe the three steps in crash recovery in ARIES**.** | CO4 | 5 |
| 3. | a. | Illustrate the optimistic concurrency control with an example. | CO3 | 12 |
|  | b. | Describe the Steal and the Force policies and how does this affect the recovery. | CO2 | 8 |
| (OR) | | | | |
| 4. | a. | List out the choices in tuning conceptual schema. Explain it in detail with suitable examples. | CO2 | 10 |
|  | b. | Name the roles of the Analysis, Redo and Undo phases in Aries. Considering the following execution briefly explain the process during the Analysis, Redo and Undo phase. What information is maintained in the transaction table and dirty page table? | CO2 | 10 |
| 5. | a. | Explain SQL’s GRANT and REVOKE commands in terms of their effect on authorization graph. In particular, discuss what happens when user pass on privileges that they receive from someone else. | CO1 | 10 |
|  | b. | Describe the six guidelines for index selection in detail. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Explain how a company offering services on the internet could use encryption based techniques to make its order-entry process secure. Discuss the role of DES, AES, SSL and digital signatures. | CO2 | 20 |
| 7. | a. | How are web search engines architected? How does the “hubs and authorities” (HITS) algorithm work? Explain in detail. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Describe the three main architectures for parallel DBMSs. Explain why the shared-memory and shared-disk approaches suffer from interference. | CO3 | 10 |
|  | b. | A relation can be distributed by fragmenting it or replicating it across several sites. Explain these concepts and how they differ? Also, distinguish between horizontal and vertical fragmentation. | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | List the characteristics of spatial data? State spatial extent.Differentiate spatial range queries, nearest neighbor queries and spatial join queries. | CO1 | 8 |
|  | b. | Explain Grid Files and R trees in detail with a neat diagram and examples. | CO1 | 12 |

ALL THE BEST