Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING)

MAKE-UP EXAMINATIONS, DEC 2017

SUBJECT: ADVANCED DATABASE SYSTEMS [CSE 4005]

REVISED CREDIT SYSTEM

30/Dec/2017

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.
- Draw diagrams wherever applicable.

1.A Describe the various steps in Query Processing with a neat diagram. **4**

1.B **4**

ID	*name*	*dept_name*	*salary*
22222	Einstein	Physics	95000
12121	Wu	Finance	90000
32343	El Said	History	60000
45565	Katz	Comp. Sci.	75000
98345	Kim	Elec. Eng.	80000
76766	Crick	Biology	72000
10101	Srinivasan	Comp. Sci.	65000
58583	Califieri	History	62000
83821	Brandt	Comp. Sci.	92000
15151	Mozart	Music	40000
33456	Gold	Physics	87000
76543	Singh	Finance	80000

instructor

Fig1.1

Showing each intermediate step, sort the table in Fig 1 by id using External Sort Merge where there are 3 block available in the memory for sorting; and one block in memory can hold only one tuple data.

1.C Show that the following equivalence rule *E1* holds in the relation ***instructor*** shown in Fig1.1 using the query *Q1*: **2**

Q1: Select * from instructor where dept_name=”Comp.Sci” and salary > 70000

E1: $\sigma_{\theta_1 \wedge \theta_2}(E) = \sigma_{\theta_1}(\sigma_{\theta_2}(E))$

2.A	Explain Thomas' Write Rule and how does it modify the timestamp-based concurrency control scheme.	**4**
2.B	List the rules for locking in Multiple Granularity Locking Protocol	**3**
2.C	Distinguish between Immediate Database Modification and Deferred database modification	**3**
3.A	Compare Round-Robin, Hash Partitioning and Range Partitioning in Parallel Databases.	**5**
3.B	Explain Homogenous and Heterogeneous databases	**3**
3.C	Describe Three-phase commit in distributed databases	**2**
4.A	Consider a database schema with a relation *Emp* whose attributes are as shown below, with types specified for multivalued attributes. *Emp = (ename, ChildrenSet multiset(Children), SkillSet multiset(Skills))* *Children = (name, birthday)* *Skills = (type, ExamSet setof(Exams))* *Exams = (year, city)* Using the above schema, write the following queries in SQL: i) Find the names of all employees who have a child born on or after January 1, 2000. ii) Find those employees who took an examination for the skill type "typing" in the city "Dayton". iii) List all skill types in the relation Emp.	**3**
4.B	Describe the different features of Structured Type in SQL	**4**
4.C	List and explain the limitation of XML Document Type Definition (DTD).	**3**
5.A	Distinguish between Raster Data and Vector Data.	**3**
5.B	With neat diagrams, describe the different types of Transaction Processing Monitors.	**5**
5.C	Is a high-performance transaction system necessarily a real-time system? Why?	**2**

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