LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **COMPUTER SCIENCE**

SECONDSEMESTER – APRIL 2018

17/16PCS2MC05- ADVANCED DATABASE MANAGEMENT SYSTEMS

Date: 21-04-2018 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part-A

Answer all the questions (10 X 2 = 20)

1. What is DDL?
2. What is physical independence?
3. What is domain relational calculus?
4. What are the additional relational operators?
5. Define entity.
6. What are weak entity sets? How these entity set are changed to strong entity set?
7. What is cluster index?
8. Write down the differences between B-Trees and B+ Trees.
9. What are the heuristics in query processing?
10. Write down the operations which are tracked by the Recovery manager of DBMS.

Part-B

Answer all the questions (5 X 8 = 40)

11. a) Explain three levels of database abstraction.

(OR)

b) Explain database system environment with block diagram.

12. a) What are the fundamental relational operators? Explain the usage of these operators with examples.

(OR)

. b) Convert the following queries into Tuple Relational Calculus.

Let the relations are **Student (deptno,name, mobile no)** and
Mess bill (bill no, bill_gen_date, account, month and year, payed status)

i. Display the name of the PG students staying in hostel from dept of computer science.
ii. Display the name and mobile number of students those not paid the mess bill till 01, April, 2017.
iii. Display the name of the students paid above 4000 in 02- Feb-2017.
iv. Display the name and mobile number of students who paid the bill on 22-Mar- 2017, above 2000.

13. a) Explain the components of E-R diagram and the relation types with example.

(OR)

b) Explain structural constraints with example.

14. a) Explain multi-valued dependency and specify, how it is resolved using Fourth Normal Form.

(OR)

b) Explain multilevel indexing with example.

15. a) Explain semantic query optimization.

(OR)

b) Explain the properties of transactions.

Part-C

Answer any two questions **(2 X 20 = 40)**

16. i) Explain the database languages..
    ii) Explain unary operators and set operators in Relational Algebra.

17. i) Explain ER-to-Relational Mapping Algorithm
    ii) Explain dynamic multilevel indexing using B+ trees with example.

18. i) Convert the following SQL queries to Relational Algebra.
    a) Select * from emp where name='Rajesh' and dept='SALES'
    b) Select empo,ename,job from emp where sal>34000
    c) Select emp.empno,emp.name,emp.job, pers.height,pers.weight from emp,pers Where emp.empno=pers.empno and pers.weight>100
    d) Select min(salary),min(commission) from emp.
    e) Select * from emp where salary >5000 and job<>'clerk'

    ii) Explain 1NF, 2NF,3NF and BCNF with example.

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