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Total Number of Pages : 02

B.Tech.  
BECS2208

4<sup>th</sup> Semester Back Examination 2017-18

DATABASE MANAGEMENT SYSTEM

BRANCH : BIOMED, BIOTECH, CHEM, ENV, FASHION, FAT, METTA, MINERAL,  
MINING, MME, PLASTIC, TEXTILE

Time : 3 Hours

Max Marks : 70

Q.CODE : C994

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

**Q1 Answer the following questions : (2 x 10)**

- What are different DBMS facilities?
- What is schema and subschema?
- Define atomicity and aggregation ?
- What are the primitive operations common to all record management System?
- What is meant by query optimization?
- What do database languages do?
- Compare Non-clustered and clustered index.
- Enlist the various transaction phases.
- What is a checkpoint and When does it occur?
- What is data dictionary?

**Q2 a) Draw & explain 3-tier schema architecture of DBMS ? (5)**  
**b) What are the factors of DBMS? (5)**

**Q3 a) Design an E-R diagram for Banking System. Find out the entity, attributes and relationships. (5)**  
**b) Check the relation is in which normal form? If required, then convert it into 2nd normal form. Relation is R(A,B,C,D,E) and functional dependencies are F={ A->C, B->E, AB->d } (5)**

**Q4 a) Write the query using tuple calculus & domain calculus. (5)**  
Given 3 relations are: Emp(e#, ename, sal)  
Assigned-to(e#, p#)  
Project(p#, pname, chief)  
(i) Display employee no(e#), employee name of those employees either getting salary more than 5000 or their employee no is greater than 105.  
(ii) Display name of the chief under whom 'Peter' is working.  
(iii) Display employee no and Project no(p#) of those employee whose chief is 'Mark'.  
**b) How B-tree is differentiate from B+ tree? Give an example. (5)**

**Q5 a) Differentiate between relational algebra and relational calculus with given example. (5)**  
**b) Why concurrency control is needed? Explain with an example. (5)**

- Q6** a) Define & explain ARIES algorithm technique for data base recovery. (5)  
b) What is shadow paging? Why it is used? (5)
- Q7** Given a relation R(A,B,C,D,E) (10)  
F = {A->B, AC->D, D->E, E->A}  
Check whether the relation is in 3NF or not. If not decompose into 3NF. Find out the decomposition is loss-less or lossy.
- Q8** Write short answer on any TWO : (5 x 2)  
a) Data base failures  
b) Serializable Schedule  
c) Parallel Data base  
d) Data ware house & Data mining