

USN

--	--	--	--	--	--	--	--	--	--

08SCS13

First Semester M.Tech. Degree Examination, Dec.09/Jan.10
Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

1. a. What four main types of actions are involved in databases? Briefly discuss each. (06 Marks)
 b. Discuss the difference between database system and information retrieval system. (03 Marks)
 c. An organization wanted to maintain research projects information. Provide an ER-diagram for research project database. List all your assumptions and constraints. (11 Marks)

2. a. What does protecting and maintaining a database mean? (04 Marks)
 b. Explain DIVISION operation. Find the quotient for the following : A/B_1 , A/B_2 and A/B_3 ; where A, B_1 , B_2 and B_3 are

A =

S No.	P No.
S ₁	P ₁
S ₁	P ₂
S ₁	P ₃
S ₁	P ₄
S ₂	P ₁
S ₂	P ₂
S ₃	P ₂
S ₄	P ₂
S ₄	P ₄

$B_1 =$

P No
P ₂

$B_2 =$

P No
P ₂
P ₄

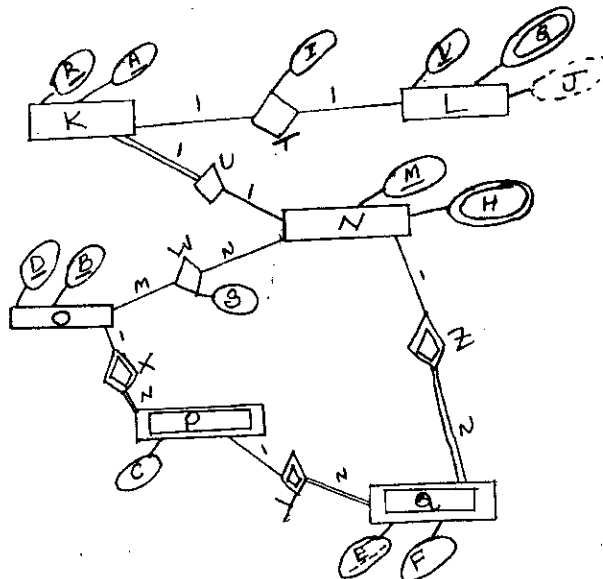
$B_3 =$

P No
P ₁
P ₂
P ₄

(08 Marks)

- c. What is lock? Why locks are used? List and explain briefly different types of locks. (08 Marks)

3. a. Develop the relational schema for the given ER diagram Fig. Q3(a). List the primary keys and foreign keys. (12 Marks)



Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

10. a) - the additional functionality incorporated in n-tier architecture (n > 3)? (04 Marks)
 b) - the classification of DBMS. (06 Marks)

11. a) - the general definitions of 2 NF and 3NF. Consider the universal relation R (A, B, C, D, E, F) and the set of functional dependencies P = {A → BCDEF, AD|F|B → F, D → E}. Decompose R into 2NF and then 3NF relations. (use general decomposition concept). (10 Marks)

12. a) - with an example explain schema intension and schema extension. (04 Marks)

13. a) - why do we need referential integrity constraint? Which concept is used for representing referential integrity and explain. (08 Marks)

14. a) - Consider a relation S = {A, B, C, D, E, H} and having the following FDs. {A → BC, CD → E, E → C, D → AEH, ABH → BD, DH → BC}. Find the key for relation S with FD G. does the above relation have a potential candidate key? If it does, what is it? If it does not why not? (08 Marks)

15. a) - how does the GROUP by clause works. (04 Marks)

16. a) - list the informal guidelines for a relational schema design. What happens when the guidelines are violated? (10 Marks)

17. a) - describe the function of a dirty bit. (06 Marks)

18. a) - how NULL's are treated in the comparison operation, aggregate function and join operations on attributes (06 Marks)

19. a) - define the concept of key in a relation. When it becomes key of a relation? (04 Marks)

20. a) - Consider the two tables T1 and T2 shown below. Show the results of the following

operations: i) T1 - T2 ii) T1 $\bowtie_{X, Y, Q = 12, B}$ T2 iii) T1 \cup T2

21. a) - Consider the two tables T1 and T2 shown below. Show the results of the following operations: i) T1 \cap T2 ii) T1 \cup T2 iii) T1 \times T2

22. a) - Consider the two tables T1 and T2 shown below. Show the results of the following operations: i) T1 \cap T2 ii) T1 \cup T2 iii) T1 \times T2 iv) T1 $\bowtie_{X, Y, Q = 12, B}$ T2.

Table T1		
P	Q	R
10	a	5
15	b	8
25	a	6

Table T2		
A	B	C
10	b	6
25	c	3
10	b	5

(10 Marks)

23. a) - Define the following terms :

i) - transaction

ii) - dependence

iii) - structural DML.

iv) - foreign key

v) - mode of a relationship type.

(10 Marks)

vi) - algorithm for testing conflict serializability of a schedule S.

(10 Marks)