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**R13** 

## Code No: 813AP

# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA III Semester Examinations, January - 2018 **DATABASE MANAGEMENT SYSTEMS**

### **Time: 3 Hours**

Max. Marks: 60

**Note:** This question paper contains two parts A and B. Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

#### PART - A

		$5 \times 4$ Marks = 20
1.a)	Give history of database systems.	[4]
b)	Explain set operations in relational algebra.	[4]
c)	What is normalization? What are useful normal forms?	[4]
d)	Explain about 2PL, serializability and recoverability.	[4]
e)	Distinguish between primary and secondary indices.	[4]

# PART - B

2 a)	Describe class hierarchies in FR model	$5 \times \delta$ Marks = 40
2.a) b)	Give a brief note on database languages.	[4+4]
	OR CO	
3.a)	What is a foreign key constraint? Why are such constraints important?	What is referential
	integrity? Give examples.	
b)	What is DBA? Write DBA responsibilities.	[4+4]

#### Explain various types of joins with examples. 4.a)

Explain logical connectives with examples. b)

# OR

5. Consider the following schema: Suppliers(sid: integer, sname: string, address: string) Parts(pid: integer, pname: string, color: string)

Catalog(sid: integer, pid: integer, cost: real)

The key fields are underlined, and the domain of each field is listed after the field name. Thus sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in relational algebra, tuple relational calculus, and domain relational calculus:

a) Find the names of suppliers who supply some red part.

b) Find the sids of suppliers who supply some red or green part.

- c) Find the sids of suppliers who supply some red part or are at 221 Packer Ave.
- d) Find the sids of suppliers who supply some red part and some green part. [8]

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[4+4]

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6.	Consider a relation R with attributes ABCDE. Let the following FDs be given: $A \rightarrow BC - BC \rightarrow E$ and $E \rightarrow DA$ Similarly let S be a relation with	attributes		
	ABCDE and let the following FDs be given: $A \rightarrow BC$ , $B \rightarrow E$ , and $E \rightarrow DA$ . (Only the second dependency differs from those that hold over R.) You do not know whether or			
	which other (join) dependencies hold.			
	a) Is R in BCNF?			
	b) Is R in 4NF?			
	c) Is R in 5NF?			
	d) Is S in BCNF?			
	e) Is S in 4NF?			
	f) Is S in 5NF?	[8]		
	OR			
7.a)	Consider a relation R with five attributes ABCDE. You are given the	following		
	dependencies: $A \rightarrow B$ , BC $\rightarrow E$ , and ED $\rightarrow A$ .			
	a) List all keys for R.			
	b) Is R in 3NF?			
	c) Is R in BCNF?			
b)	Explain about inclusion dependencies.	[4+4]		
8 a)	Discuss about transaction support in SOI			
b.a)	Explain about recovering from a crash recovery	[4+4]		
0)		[ ' ' ']		
9.a)	Write some anomalies associated with interleaved execution.			
b)	Write a brief note on ARIES.	[4+4]		
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10.	Give comparison of three file organizations in detail.	[8]		
	OR			
11.a)	Distinguish between extendable and linear hashing.			
b)	Explain levels of redundancy.	[4+4]		
	21			
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