KUMARAGURU
college of technology
character is life

MCA DEGREE EXAMINATIONS: MAY 2018
(Regulation 2017)
Second Semester
MASTER OF COMPUTER APPLICATIONS
P17CAT2002: Data Base Management System

COURSE OUTCOMES
CO1:   Use the techniques, components and tools of a typical database management system
CO2:   Understand basic database concepts, including the structure and operation of the relational data model
CO3:   Understand the concepts of open source databases like MySQL and MongoDB
CO4:   Design and implement a small database project using open source databases
CO5:   Design a database information system and implement the design in SQL/NoSQL

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	List the differences between relation and relation schema.	CO1	[K$_2$]
2.	List the reasons why null values might be introduced into the database.	CO2	[K$_1$]
3.	Define lossy decomposition and lossless decomposition.	CO2	[K$_1$]
4.	Cite example of a relation schema R and a set of dependencies such that R is in 3NF but is not in BCNF.	CO2	[K$_2$]
5.	List out the different types of NoSQL databases.	CO4	[K$_1$]
6.	Identify the key features of key-value databases.	CO5	[K$_2$]
7.	List the ACID properties with usefulness.	CO3	[K$_1$]
8.	List the goals of physical database design.	CO3	[K$_4$]
9.	Define trigger and specify the requirements for designing a trigger.	CO4	[K$_2$]
10.	Distinguish horizontal fragmentation and vertical fragmentation, in distributed databases.	CO3	[K$_4$]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Differentiate candidate key and primary key. What is a super key? Give example for each of the above keys.	(6)	CO1	[K$_4$]
	b)	What are the important components of E-R model? Draw the E-R diagram for a net banking system.	(10)	CO1	[K$_4$]

12.	a)	Consider the relation marks (ID, Score, Grade). The grades are assigned to students as follows: grade F if Score < 40, grade C if 40 <= Score < 60, grade B if 60 <= Score < 80, and grade A if 80 <= Score. Construct SQL queries to perform the following: (i) Display the grade for each student, based on the marks relation. (ii) Find the number of students with each grade.	(6)	CO2	[K$_5$]
	b)	Explain the aggregate and set functions in SQL with example.	(10)	CO2	[K$_3$]
13.	a)	State and explain 1NF, 2NF, 3NF and the functional dependencies satisfied by each of them.	(8)	CO2	[K$_2$]
	b)	Explain the steps for database connectivity using ODBC.	(8)	CO2	[K$_3$]
14.	a)	Distinguish between relational and NoSQL databases.	(6)	CO3	[K$_4$]
	b)	Illustrate the CRUD operations of MongoDB with example.	(10)	CO5	[K$_3$]
15.	a)	Deduce the need for concurrency control. Demonstrate two-phase locking protocol for concurrency control. Show that the two-phase locking protocol ensures conflict serializability, and that transactions can be serialized according to their lock points.		CO1	[K$_3$]
16.	a)	Explain the concepts of ECA model with suitable example.	(8)	CO4	[K$_2$]
	b)	Write a short note on multimedia databases.	(8)	CO4	[K$_2$]

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