Register Number:……..

KUMARAGURU college of technology
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B.TECH DEGREE EXAMINATIONS: MAY 2017

(Regulation 2015)

Fourth Semester

INFORMATION TECHNOLOGY

U15ITT401: Database Management Systems

COURSE OUTCOMES

CO1: Outline an ER model for a defined problem

CO2: Explain the basic concepts of query processing, transaction and storage management

CO3: Explain the basic concepts of distributed databases, XML and Database security

CO4: Design a database for a given problem

CO5:

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the symbols used in relational algebra. CO2 [K_L]

List I	List II
A. σ	i. Projection
B. ×	ii. Join
C. Π	iii. Selection
D. ⋈	iv. Cartesian

	A	B	C	D
a)	i	iii	iv	ii
b)	iv	iii	ii	i
c)	iii	iv	i	ii
d)	iv	iii	i	ii

2. Choose the level that describes how the data are stored. CO2 [K_L]

a) Physical b) Logical

c) System d) View

3. The _____ standard defines an API that Java programs can use to connect to database servers. CO4 [K_L]

a) JDBC b) ODBC

c) OLAP d) OLTP

4. Identify the following rule in functional dependency: If $\alpha \rightarrow \beta$ holds and $\beta \rightarrow \gamma$ holds, then $\alpha \rightarrow \gamma$ holds. CO4 [K_L]

a) Augmentation b) Decomposition

c) Reflexivity d) Transitivity

5. In B^+-tree, the number of pointers in a node is called _____ of the node. CO2 [K_L]

a) Fanout b) Fanin

c) Pointout d) Pointin

6. Which of the following are not aggregate functional CO2 [K_L]

i) Max ii) Sum iii) Project iv) Select

a) ii, iii, iv only b) i, ii, iii only

c) iii, iv only d) i, ii, iii, iv

7. Pick the state in which the transaction may not always complete its execution successfully. CO2 [K_L]

a) Active b) Commit

c) Abort d) Fail

8. The blocks that reside on the disk are referred to as _____ block CO2 [K_L]

a) Physical b) Buffer

c) Main d) Disk

9. Identify the various forms of data transparency? CO3 [K_L]

i. Fragmentation ii. Replication iii. Location

a) ii, iii b) i, ii

c) i, iii d) i, ii, iii

10. At which level the DBA specifies the particular privileges that each account holds independently of the relations in the database? CO3 [K_L]

a) Account b) Relation

c) Table d) User

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11.	Differentiate between instance and schema.	CO4	[K_2]
12.	Give an expression in the relational algebra to display the Employee ID and Name from the Employee table.	CO2	[K_3]
13.	Compare Dynamic Primary key and Foreign key	CO4	[K_3]
14.	Specify the two requirements needed to design a trigger mechanism.	CO4	[K_2]
15.	Compare space and dense indices.	CO2	[K_2]
16.	What is Query Processing? Specify the steps involved in it.	CO2	[K_2]
17.	State ACID property of the transactions.	CO2	[K_2]
18.	Classify the failures that occur in a system.	CO2	[K_2]
19.	What is a dead lock?	CO3	[K_2]
20.	Differentiate homogenous and wet erogenous databases.	CO3	[K_2]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	i) Draw the architecture of a database system. Also recall the functionality of the various components of a database system and the connections among them.	(8)	CO4	[K_2]
	ii) Specify the functionalities of the different types of database users.	(6)	CO3	[K_2]

22. Consider the following relational database, where the primary keys are Underlined — CO2 [K6]

    student (<u>rollno,</u> student-name, city)

    study(<u>deptid</u>, department-name, rollno)

    Teach(facultyid, faculty-name, designation, deptid)

    Formulate an expression in SQL for each of the following queries

    i. Find the name of all students who lives in Chennai
    ii. Display the faculty names of IT department
    iii. Display the number of faculty in each department
    iv. Identify the students who is taught by ABC faculty
    v. Delete the student details of all CSE students

23.	Construct an E-R diagram for the University enterprise. Identify and list the related Entity with attributes and its relationship sets. Each instructor must have exactly one associated department.		CO1	[K6]
24.	i) Specify the need for Normalization. Illustrate the various types of Normal Forms with suitable examples.	(8)	CO4	[K_3]
	ii)Compare the closure of the following set of Functional dependency $AB \rightarrow C$, $C \rightarrow D$, $D \rightarrow A$ for the relation R=(A,B,C,D). List Candidate key	(6)	CO4	[K_3]
25.	With suitable diagrams, infer the characteristics of several variations that have been proposed to the basic RAID schemes. Also, give its significance.		CO2	[K_4]
26.	i) Discuss the structure of XML document.	(7)	CO3	[K_2]
	ii)Explain the steps in quary processing with a suitable diagram.	(7)	CO2	[K_2]
27.	Briefly discuss how to implement atomic transactions in a distributed database using the two-phase commit and three-phase commit protocol.		CO3	[K_2]

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