

END SEMESTER EXAMINATION, MAY/JUNE - 2019**MCA THIRD SEMESTER****COURSE CODE: MCA202****COURSE TITLE: DATABASE MANAGEMENT SYSTEMS****[Time allotted: Three hours]****[Max. Marks: 100]****Note:** Attempt all Sections & Questions.**Section (A)****Q.1. Attempt all questions.****(2 x 10 = 20)**

- a.
- b. Define degree of a relation.
- c. What is entity set?
- d. What is database? What is DBMS?
- e. Differentiate between attribute and entity.
- f. What is data redundancy?
- g. List any four applications of DBMS.
- h. Define instance.
- i. What is schedule in transaction?
- j. Distinguish the term primary key and foreign key.
- k. With an example explain what a multivalued attribute is?

Section (B)**Q.2. Attempt any 5 questions.****(7 x 5 = 35)**

- a. Consider the below transaction. is the transaction is conflict serializable? Justify you answer.
S: R2(X), W3(X) C, W1(X) C, W2(Y), R2(Z) C, R4(X), R4(Y) C
- b. Explain various types of attributes in E-R model with example.
- c. Write a note and list down the aggregation operators.
- d. Describe the execution of procedure with example in SQL
- e. What is lock? Explain with an example.
- f. Explain in detail architecture for DBMS.
- g. Define a functional dependency with example.

Section (C)**Attempt any 3 questions.****(15 x****3 = 45)**

- Q.3.
 - a. Define relational algebra. How algebraic expressions help in producing new relations. **(05)**
 - b. With relevant examples discuss the various operations in Relational Algebra. **(10)**
- Q.4.
 - a. Discuss the various disadvantages in the file system and explain how it can be overcome by the database system.
 - b. What are the different Data models present? Explain in detail .
- Q.5.
 - a. Define normalization? Consider the following relation for published books:
BOOK (Book_title, Authurname, Booktype, Listprice, Publisher)
Suppose the following dependencies exist:
Book_title → Publisher, Book_type Book_type → Listprice Authurname → Author-affil
 - i. What normal form is the relation in? Explain your answer.
 - ii. Apply normalization until you cannot decompose the relations further. State the reasons behind each

decomposition.

b. List and discuss the six inference rules for functional dependencies. Give relevant examples.

Q.6. a. Define a transaction. Then discuss the following with relevant examples:

i. A read only transaction ii. A read write transaction

b. With a neat sketch discuss the states a transaction can be in.

Q.7. Schema defined for the Employee Management System is:

Student(SID, name, address, contact_no)

Course(ccode, cname, Instructor_id,credits)

Instructor(instructor_id, name, dept)

Registration(SID,ccode,date)

a. Create and insert data for above schema.

(05)

b. Write SQL queries for the following and show results:

(10)

i. Find the total number of instructors in each department.

ii. Retrieve the details of the student enrolled in course 'DBMS'

iii. Retrieve the name and address of the student registered on '03/07/2016'

iv. Add a new field DOB in student table.

v. Retrieve the name and ID of the students studying the course with course code starting with 'BCA'
