Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

I SEMESTER M.C.A.

END SEMESTER EXAMINATIONS, NOV 2017

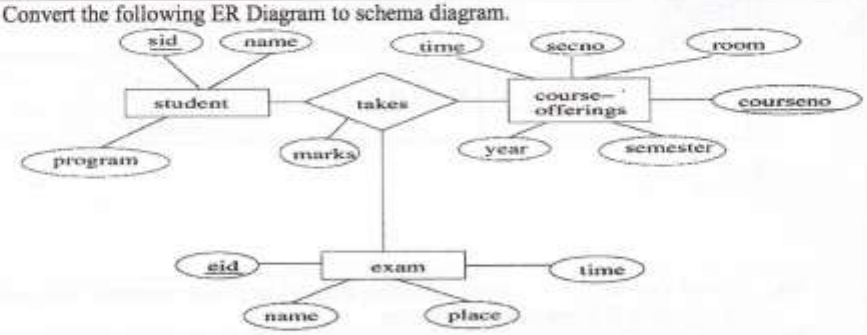
SUBJECT: ADVANCED DATABASE MANAGEMENT SYSTEMS [MCA 4104]

REVISED CREDIT SYSTEM
(25/11/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A.	Describe the multiple-granularity locking protocol for concurrency control.	**5**
1B.	Convert the following ER Diagram to schema diagram. 	**3**
1C.	What are the two levels of data independence?	**2**
2A.	A relation R(A, B, C, D, E, F) has the following set of functional dependency: F= {A→CD, B→C, F→DE, F→A}. Is the decomposition of R in R1 (A, B, C), R2 (A, F, D) and R3 (E, F) dependency preserving and lossless decomposition?	**5**
2B.	Discuss the two ways of evaluating a query with the help of an example.	**3**
2C.	What is a role name? In what situations is it necessary to use role names in the description of relationship types?	**2**

3A.	Consider the following relational schema: Book(ISBN, Book_title, Category, Price, year, page_count, p_id) Publisher (P_id, Pname, Address, State, Phone, Email_id) Author (A_id, Aname, city, state, zip, phone, url) Author_Book (A_id, ISBN) On the basis of this relational schema, write the following queries in relational algebra: a) Retrieve the city, phone and url of the author whose name is *John*. b) Retrieve the name, address of all the publishers located in *New York* state. c) Retrieve the title and price of all the *textbooks* with a page count greater than *600*. d) Retrieve the ISBN, title and price of the books belonging to either *novel* or *language* book category. e) Retrieve the Id, name, address and phone of publishers publishing *novels*.	5
3B.	Explain the inference rules for functional dependencies.	3
3C.	How is a query tree different from a query evaluation plan?	2
4A.	Explain the different RAID levels.	5
4B.	Explain the different phases of database design	3
4C.	Check the following schedule for conflict serializability with the help of a precedence graph.	2

T8	T9	T10
Read(A)		
Read(B)		
Write(A)		
	Read(A)	
	Write(A)	
		Read(A)

5A.	Discuss the external sort merge algorithm with the help of an example. Also analyze the cost the algorithm in terms of block transfers	5
5B.	Explain the two phase locking protocol with an example.	3
5C.	Consider the relational schema R(A, B, C, D, E, G) with set F of functional dependencies {A→B, BC→D, D→E, D→G}.Find the closure of F.	2