Reg. No.										

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FOURTH SEMESTER B.Tech. (IT) DEGREE END SEMESTER EXAMINATION, MAY-2016
SUBJECT: DATABASE SYSTEMS (ICT-206)
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS **14/05/2016** **MAX. MARKS: 50**

Instructions to candidates

- Answer all questions
- Missing data, if any, may be suitably assumed

1A. What are the different types of end users. Explain with suitable example.

1B. List the properties of Transaction. What is the necessity of each of the properties?

1C. Given a Schedule S1: R1(X), R2(Z), R1(Z), R3(X), R3(Y), W1(X), R2(Y), W2(Z), W2(Y), check schedule S1 is conflict serializable or not.

(5+3+2)

2A. What do you mean by serializable schedule? Explain two ways of checking the Serializability.

2B. With example demonstrate the use of precedence graph algorithm under Transaction concept.

2C. Compute the closure of the following set F of functional dependencies for relation schema R = (A, B, C, D, E), F = $\{A \rightarrow BC; CD \rightarrow E; B \rightarrow D; E \rightarrow A\}$. List the candidate keys for R.

(5+3+2)

3A. Consider the following relation **Lending-schema = (branch_name, branch_city, assets, customer_name, loan_number, amount)** with the following set of functional dependencies:

Branch_name →assets, branch_city
Loan_number → amount, branch_name

Figure Q.3A

Find the key and Normalize the relation to the highest possible normal form.

3B. Suppose that relation R(A,B,C,D,E) is decomposed into R1(A,B,C) and R2(A,D,E). Find whether this decomposition is lossless or lossy decomposition.

3C. Explain the working of immediate recovery technique.

(5+3+2)

4A. Consider a system which stores the information about the books. Each book maintained under this system has an ISBN, title, price and year information. The book is published by particular publisher. The system stores URL, phone, address and name of the publisher. System also stores information about the author such as name, address and url. Author can write any number of books. System maintains customer information along with book information they have purchased. Customer information like email-id, name, address and phone are stored. System has few warehouses to stock books. Warehouse has information like code, address, and phone. Each warehouse can store few copies of the book.

Draw an ER-Diagram describing the above scenario.

4B. With an example explain '**on update cascade**' clause.

4C. Given the name of the department, define a function using PL/SQL, that returns the number of instructors in that department.

(5+3+2)

5A. What do you mean by functional dependency? Check following Functional dependency sets are equivalent or not.
F={A→B, AB→C, D→AC, D→E} and G={A→BC, D→AB}

5B. Consider the database schema given in Figure Q.5B

CUSTOMER(cust#: int, cname:string, city:string)
ORDERS(order#:int, odate:date, cust#:int, ordamt: int)
ORDER_ITEM(order#:int, item#: int, qty: int)
ITEM(item#: int, unitprice: int)
SHIPMENT(order#: int, warehouse#: int, shipdate: date)
WAREHOUSE(warehouse#: int, shipdate: date)

Figure Q.5B

Write the SQL query to print the order information (along with its customer information), which has at least two items each with quantity > 50.

5C. Describe the following:
i.) **some** construct ii.) **lateral** construct

(5+3+2)

6A. Consider the database schema given in Figure Q.6A

BOOK(ISBN, book_title, category, price, copyright_date, year, page_count, p_id)
PUBLISHER(p_id, Pname, Address, State, Phone, Email_id)
AUTHOR(A_id, Aname, City, State, Zip, Phone, Url)

Figure Q.6A

Write SQL query to do the following:

i. Increase the price of all books belonging to novel category by 10%.

ii. Retrieve details of authors residing in the same city as 'Lewis Ian'.

iii. Retrieve the publisher names who have published more than 3 books copyrighted in April 2016.

6B. What is an extraneous attribute? How to test efficiently that an attribute is extraneous? Explain with a suitable example.

6C. Using the relations given in Figure Q.5B, produce a listing: CUSTNAME, No. of Orders, AVG_ORDER_AMT, where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer.

(5+3+2)