Paper Code: MCA-313 Roll No.										

M.C.A.

(SEM III) ODD SEMESTER EXAMINATION 2015-16

DATABASE MANAGEMENT SYSTEM

[Time: 3 hrs.] **[Max. Marks: 100]**

Note- Attempt All Questions. All Questions carry equal marks:-

Q1. Attempt any four parts. **[5X4=20]**

a) Write short note on Trigger & Cursor.
b) Explain the different data models of DBMS.
c) Draw an E-R Diagram of online Railway Reservation System and assume Entity and its Attributes.
d) What do you understand by locking?
e) Explain Concurrency control technique in Distributed system.
f) Explain Super Key, Candidate Key, and Primary Key & Alternate Key with suitable example.

Q2. Attempt any two parts. **[10X2=20]**

a) Explain the Basic operation of Relational Algebra with suitable Example?
b) What is the loss less join Decomposition? Consider the given Relational Schema R(A B C D E G) And the set of Functional Dependencies F {AB->C, AC->B , AD->E, B->D, BC->A, E->G} and the decompositions of R into the relation R1(A B C) ,R2(A C D E) and R3(A D G).
Check whether the composition is Lossless or Lossy join by matrix method in Details?
c) Find the Candidates key of the given Relations?
(i) R (A B C D E) Functional Dependencies {A->B, B->C, C->D, D->A}.
(ii) R (A B C D E H) Functional Dependencies { A->B, BC->D, E->C , E->C , D->A }.

Q3. Attempt any two parts **[10X2=20]**

a) What do you mean by Transaction? What is the property of Transaction? Explain The Different types of Schedule with suitable Example?
b) Give the rule of serializability testing and also find that the given schedules are conflict serializable or not:
(i) S1=R2(Z); R2(Y); W2(Y); R3(Y); R3(Z); R1(X); W1(X); W3(Y); W3(Z); R2(Z); R1(Y); W1(Y); W2(X).
(ii) S2=R1(A); R2(A); R3(A); R4(A); W1(B); W2(B); W3(B).
c) What do you mean by Normalization? Gives the details about 1NF, 2NF, 3NF and BCNF with suitable examples? And also justify the redundancy level of these normal forms?

Q4. Attempt any two parts. **[10X2=20]**

a) Define the deadlock and starvation? Discuss approaches used for handling Deadlock?
b) Consider the following relational Schema .
Location (Location_ID , Regional _group);
Department (Department_ID, Department_Name , Location _ID);
Job(Job_ID ,Designation);
Employee(Employee_ID, LAST_NAME, FIRST_NAME, MIDDLE_NAME, JOB_ID, SALARY, Department_ID);

Solve the given questions with the help of SQL:

(i) List out the employee details according to their LAST_NAME in ascending order and then on Department_ID in descending order?

(ii) List out the employee who are working in department_Id 10 and draw the salary more than 3500?

(iii) List out the Department_ID having at least four employees?

(iv) Find out the employee who work for the department whose name starts with s.

c) Define the concept of Recoverable, Cascade and Strict schedules and compare them in term of their Recoverability?

Q5. Attempt any two parts. [10X2=20]

a) Normalize the following Relation up to BCNF and Explain each of them clearly.
R (A B C D E F)
Functional Dependencies F {A->BCDEF, BC->ADEF ,D->E ,B->F}

b) What do you mean by multiple Granularities? Discuss the validation based protocol with a suitable example.

c) i) Explain the Codd's Rule in Details?

ii) What do you mean by functional Dependencies? Explain rules of functional Dependencies in Details?