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Total No. of Questions: [09]

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**B. Com (Hons.) (Semester – 6<sup>th</sup>)**  
**DATABASE MANAGEMENT SYSTEMS-I**  
**Subject Code: BCSE0F95**  
**Paper ID: [OE2140324]**

**Time: 03 Hours**

**Maximum Marks: 60**

**Instruction for candidates:**

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

**Section – A**

**(2 marks each)**

Q1. Attempt the following:

- a. What is the difference between an entity and an attribute? How are they represented in an ER Diagram?
- b. What is a transaction? Explain the ACID properties of a DBMS.
- c. What is the main difference among DROP, DELETE and TRUNCATE command?
- d. Describe the different types of keys in a DBMS?
- e. What is the difference between having and where clause?
- f. What do you understand by functional dependency and transitive dependency in DBMS?
- g. Difference between relation calculus and relational algebra.
- h. Explain the states through which a transaction passes during execution.
- i. Differentiate between Wait die and wound wait protocols.
- j. Write a query to remove duplicate rows in SQL?

**Section – B**

**(5 marks each)**

- Q2. (a) Write a SQL query to find the nth highest salary in SQL?  
(b) Write a SQL query to find the names of employees that begin with 'A'?
- Q3. Explain what is a deadlock and mention how it can be resolved? What are the differences between an exclusive lock and a shared lock?
- Q4. Explain 2-phase locking protocol. Why is 2 phase locking needed?
- Q5. What do you understand by concurrency control in database systems? What mechanisms can be used for this purpose?
- Q6. What do you mean by integrity of data? List any two integrity constraints. Explain how to deal with constraint violation?

**Section – C**

**(10 marks each)**

- Q7. What is normalization and explain the different normal forms for normalization with examples.
- Q8. What is serializable scheduling? Explain with an example. Differentiate between serial schedule and serializable schedule.
- Q9. What is Database Access Control? Explain access control mechanisms: Discretionary Access Control and Mandatory Access Control.