2019

MSc

2nd Semester Examination

ADVANCED DATABASE MANAGEMENT SYSTEM

PAPER – COS-201

Full Marks : 50

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their

Own words as far as practicable.

Illustrate the answers wherever necessary.

1. **Answer the following questions** (any *FOUR*):   4x2

a) What do you mean by integrity constraint?
b) What is lossless decomposition?
c) What is transaction?
d) When do we call a relation is in 3NF?
e) Who are the different database users?
f) Define a Foreign KEY?
g) What is View?
h) What is the use of UPDATE Command? Explain with Examples.

2. **Answer the following questions** (any *FOUR*):   4x4

a) Discuss the 'Insertion anomalies', 'updation anomalies' and 'deletion Anomalies' with respect to normal forms with suitable examples.
b) Why a relation that is in 3NF generally considered good although BCNF is stronger than 3NF?
c) Describe entities, attributes, relationships and primary keys.
d) Describe ACID Properties of a transaction.
e) In a concurrent schedule, when do two instructions conflict?
f) "A super key is always a candidate key" true of false? Justify with suitable examples.
g) Describe temporary update problem of concurrent transactions. Give example.
h) What is a Commit Point? Describe the process of roll back of a transaction.

3. Answer the following questions (any *TWO*):　　　　　　　　　2x8

a) Describe Three-Scheme Architecture of DBMS. Define Physical Data Independence and Logical Data Independence.
What is functional dependency? Define weak entity type.　　3+2+1.5+1.5

b) Consider the following tables:
　　　DEPT (<u>Dcode</u> , Dname),
　　　Emp (<u>Ecode</u> , Ename, Basic, Dcode, joining_date)

Write down the SQL statements for the following:

i) For each department, show Dname and total basic of the employees in department.　　3+3+2

ii) Find out the name of the departments where no person is working.

iii) Find out the name of the employees who are working in the department name as 'ABC'.

c) i) Describe relational algebra and relation calculus with example.
　ii) In a concurrent schedule, when do two instructions conflict?　　4+2+2
　iii) Deadlock cannot occur in time stamp based protocol. Why?

d) Write short notes on following topics (any two)　　　　　　2x4

i) BCNF.

ii) Armstrong's axioms.

iii) Data Dictionary.

iv) Two-phase locking.

(Internal Assessment: *10 Marks*)