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### Code No: 813AP JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA III Semester Examinations, December - 2019 **DATABASE MANAGEMENT SYSTEMS**

### Time: 3hrs

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

# PART - A

## $5 \times 4$ Marks = 20

- What is data model? Explain various types of data model? 1.a) [4] What is the difference between tuple relation calculus and domain relation b)
  - calculus? [4]
  - Explain Multivalued dependencies and Fourth normal form with example? [4] c)
  - What is concurrency control? Explain. d)
  - e) What is indexing? Explain the cluster index, primary and secondary indexes. [4]

# PART - B

### $5 \times 8$ Marks = 40

[4]

- What is E-R Model? Define generalization, specialization and aggregation? How are 2.a) they represented in E-R Model?
- List out the significant difference between file processing system and DBMS. b) [4+4]OR
- 3.a) Define data independence? Explain difference between logical and physical data independence.
  - What is E-R Model? Draw an E-R Diagram for Airline reservation system. b) [4+4]
- Let R = (ABC) and S = (DEF) let r(R) and s(S) both relations on schema Rand S. 4.a) Give an expression in the Tuple relational calculus that is equivalent to each of the following. i)  $\prod_{A1}(r)$ ii)  $\sigma_{p=19}(\mathbf{r})$ iii) rXs iv)  $\prod_{A.F.} (\sigma_{C=D}(rXs))$ .
  - What is a trigger? Explain various types of triggers with examples. b) [4+4]OR
- Explain the following Operators in SQL with examples 5.a) i) EXISTS ii) NOT IN iii) INTERSECTION iv) UNION
  - Explain various DML stamens in SQL With example. [4+4]b)
- What are the conditions required for a relation to be in BCNF What is the difference 6.a) between 3NF and BCNF.
  - What is the maximum normal form satisfying the following relation R and functional b) dependencies? R(A,B,C,D,E,P) and F

$$IF.D = \{AB \rightarrow CD, DE \rightarrow P, C \rightarrow E, P \rightarrow C \}$$

$$OR$$

$$[4+4]$$

- 7.a) Define functional dependencies. How are primary keys related to FD's?
  - b) Explain about Inclusion dependencies with example? [4+4]

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Max.Marks:60

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Explain the multiversion concurrency control protocol ? How is it used to ensure 8.a) Serializability? Explain the following b) i) Write-Ahead Log Protocol ii) Fuzzy Check point. [4+4]OR 9. Give an overview of deadlocks. [8] What are the difference between ISAM and B + trees Indexes? Explain Deletion and 10. insertion operations in ISAM with examples? [8]

OR

11. What is linear hashing? How does linear hashing avoid directory? Discuss the round robin splitting of buckets. [8]

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