

R15

Code No: 823AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**MCA III Semester Examinations, April/May - 2019****DATABASE MANAGEMENT SYSTEMS****Time: 3hrs****Max.Marks:75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**5 × 5 Marks = 25**

- 1.a) Is data model mandatory for a database management system? Justify your answer. [5]
- b) What is an active database? Give its applications. [5]
- c) State the Armstrong's axioms for functional dependencies. [5]
- d) Differentiate between wound-wait and wait-die policies. [5]
- e) Compare hash file organization with heap file organization. [5]

PART - B**5 × 10 Marks = 50**

2. Describe the database management systems architecture with suitable diagram. [10]

OR

- 3.a) What is a weak entity set? How to represent it in ER diagram? What constraints to be followed for it?
- b) Quote examples for composite attribute, derived attribute, partial participation. [5+5]

4. Consider the following schema to write queries in relational algebra:

EMP(eid, ename, ecity)

PROJECT(pno, pname, duration)

Assign(eid, pno, number_of_hours_per_week)

- a) Find the names of the employees working for 'stegnography' project.
- b) Find the names of the projects having the employee 'Niranjan Gupta'
- c) Find the total effort by the employees per week by the employees from 'Warangal'. [10]

OR

- 5.a) Differentiate between nested query and correlated query.
- b) How does group by clause executed in SQL? [5+5]

6. What are the problems caused by redundancy? Explain mechanisms to address these problems. [10]

OR

- 7.a) Why is Boyce-Codd normal form is known as new-third normal form?
- b) With an example explain multi valued dependencies. [5+5]

8. How does two phase locking protocol ensure conflict serializability? Explain with examples. [10]

OR

- 9.a) What is the usage of write ahead log protocol? [5+5]
b) Depict the significance of Check pointing.
- 10.a) Define track, cylinder, rotational delay.
b) Contrast sparse with dense index. [5+5]

OR

11. Construct an extendible hashing index structure for the following records (key *). Consider a bucket can hold only 3 records. Depict global and local depths at every stage of construction. [10]

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|----|----|-----|-----|-----|----|----|-----|-----|----|-----|-----|-----|----|-----|
| 4* | 8* | 16* | 24* | 32* | 5* | 9* | 12* | 15* | 3* | 10* | 40* | 48* | 7* | 20* |
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