Reg. No ..... Name **20U328**

B C A DEGREE END SEMESTER EXAMINATION - OCT. 2020 : JANUARY 2021

SEMESTER 3 : MOBILE APPLICATIONS AND CLOUD TECHNOLOGY

COURSE : **19U3CRBCA9 : RDBMS**

(For Regular - 2019 Admission and Supplementary - 2016/2017/2018 Admissions)

Time : Three Hours Max. Marks: 75

PART A
Answer All (1 mark each)

1. Illustrate the advantage of using a database rather than using files.
2. Construct a Relational Schema for a relation?
3. Illustrate the advantage of hierarchial data model?
4. Define Super Key.
5. Write relational algebraic expression to list all staff with salary greater than 10000.
6. what is meant by insertion anomaly in a relation?
7. Define trivial dependency.
8. Define concurrency?
9. What is mean by aborted state in a transaction?
10. Describe the implementation of time stamps.

(1 x 10 = 10)

PART B
Answer any 8 (2 marks each)

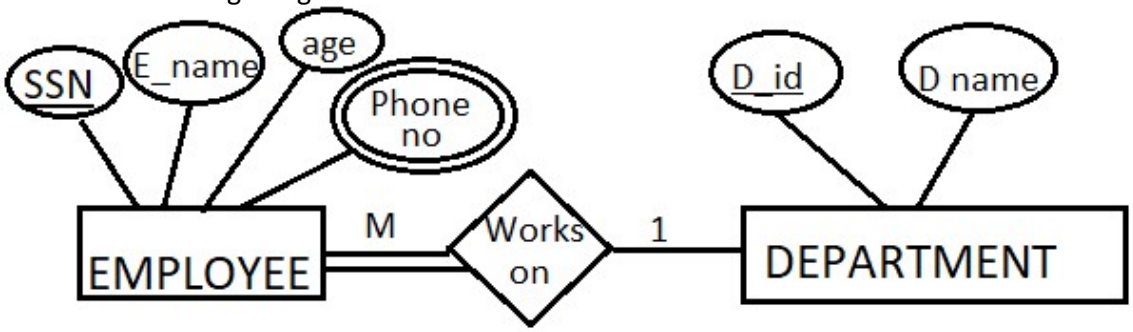
11. Discuss the use of the transaction manager in DBMS?
12. Distinguish between the strong entity set and weak entity set?
13. Differentiate between primary and foreign key?
14. Describe the conditions to implement UNION operation in Relational Algebra.
15. Construct an SQL command to retrieve the list of employees and the projects they are working on, ordered by the department, and within each department, ordered alphabetically by the last name, then the first name.
16. Differentiate Functional dependency and Trivial functional dependency with examples.
17. What do you understand by database Normalization?
18. Define non-serial schedule.
19. What is transaction log? What are its functions?
20. Differentiate between the Share and the exclusive locks.

(2 x 8 = 16)

PART C
Answer any 5 (5 marks each)

21. Explain about the object based data models.
22. Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period of time, and has associated due date, and the date when the payment was received.
23. Discuss the characteristics of relations that make them different from ordinary tables and files?

24. Convert the ER diagram given below to the relational model.



Find all relations from the above ER model. Write the relational schema for each relation

25. Consider the relation R=(ABCD) and the set of functional dependencies F=[AB→CD, C→A, D→B]. Identify all the candidate keys of the relation R?
26. What is mean by lossless decomposition? illustrate with an example?
27. Explain ACID properties of a transaction.

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. UPS prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, UPS relies on a company-wide information system. Shipped items are the heart of the UPS product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the UPS system at a single retail center. Retail centers are characterized by their type, uniqueID, and address. Shipped items make their way to their destination via one or more standard UPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique scheduleNumber, a type (e.g, flight, truck), and a deliveryRoute. Create an Entity Relationship diagram that captures this information about the UPS system. Be certain to indicate identifiers and cardinality constraints.
29. Consider the following relations:
EMPLOYEE(SSN, NAME, GENDER, AGE, SALARY, DNUM)
DEPARTMENT(DNO, DNAME, DPHONE)
PROJECTS(PNO, PNAME)
WORK_ON(SSN, PNO)
Construct the SQL expressions for retrieve the list of employees and the projects they are working on, ordered by department and within each department alphabetically by first name then last name.
30. What is normalization? Illustrate 1NF, 2NF, 3NF and BCNF with the help of example.
31. Explain recoverable and non-recoverable schedule with example?

(12 x 2 = 24)