Birla Institute of Technology and Science, Pilani

Mid-semester examination

Data management & warehousing

MPBA G506

Total marks : 100

Time : 4:00 pm - 5:30 pm (90 minutes)

Attempt all 20 questions

1. Decompose following functional dependency **1**
   XYZ → AB

2. Explain the purpose of databases and database management systems? Explain the features that DBMS systems provide. **10**

3. Explain the following terms. (Any 3 terms) **9**
   a. Data isolation
   b. Data abstraction
   c. Data integrity
   d. Data mining

4. What are the differences between logical schema & physical schema? **2**
   or
   What are the differences between procedural and declarative languages?

5. Find the candidate key for the relation R(PQRST) where functional dependency between attributes is given as { P→Q, T→Q, R→Q, S→Q, R→P } **5**

6. Check the normalization for a relation R(PQRSTU) where functional dependency between attributes is given as { TR→S, R→U, P→Q, T→P } **10**

7. What are domain constraints? **2**
   or
   What is the difference between 2-tier and 3-tier architecture?

8. What is the difference between foreign key constraint & referential integrity constraint? **2**

9. Create the schema of a real-world organization. Create at least 3 tables each having at least 3 attributes. Draw the schema diagram where at least 2 tables can be joined using a foreign key. **4**

10. Briefly define the types of relational algebra operators. **4**

11. What are equivalent queries? Provide an example for the same. **2**

12. Explain the E-R model with an example? **5**

13. Explain what is the role of a buffer manager in DBMS? **4**

    or

    Draw the schematic diagram for the database management system's structure.

14. Explain what is lossless decomposition with an example. **10**

    or

    Check the normalization for a relation R(PQRS) where functional dependency between attributes is given as { S→P, PQ→RS }

15. Check the normalization for a relation R(PQRS) where functional dependency between attributes is given as { R→S, P→Q, P→R, R→P } **10**

16. Explain the concept of aggregation with the help of an E-R diagram **2**

17. Explain why normalization is required and how it works? **3**

    or

    Explain what is mapping cardinality, cardinality types and cardinality limits.

18. Write the SQL code to generate1 tuple using ***'SQL's SELECT statement'*** having at least 2 attributes accessing from two tables without joining them? **5**

    or

    Write the SQL code to insert a tuple in a table with 5 attribute

19. Define differences between unique key and primary key **1**

20. What are functional dependencies (F.D)? Name 7 F.D. properties using the attribute set {A,B,C,D,E}. **9**