

Reg. No. : 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code : 81115**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Seventh Semester

OIT 551 – DATABASE MANAGEMENT SYSTEMS

(Common to: Aeronautical Engineering / Aerospace Engineering / Agriculture Engineering / Automobile Engineering / Biomedical Engineering / Electrical and Electronics Engineering / Electronics and Communication Engineering / Electronics and Instrumentation Engineering / Electronics and Telecommunication Engineering / Industrial Engineering / Industrial Engineering and Management / Instrumentation and Control Engineering / Manufacturing Engineering / Marine Engineering / Material Science and Engineering / Mechanical Engineering / Mechanical Engineering (Sandwich) / Mechanical and Automation Engineering / Mechatronics Engineering / Medical Electronics / Production Engineering / Robotics and Automation / Bio Technology / Food Technology / Pharmaceutical Technology)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the significant differences between a file system and a DBMS.
2. Describe the different types of attributes in ER Model.
3. Give the significance of integrity constraints in designing a relational database design.
4. List all the types of join.
5. What are the advantages and disadvantages of views in the database?
6. Write down the importance of triggers.
7. What do you understand by Functional dependency?
8. Where do we use BCNF? Why?
9. Differentiate RBAC with DAC.
10. List the types of queries in IR systems.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the system structure of a database system with neat block diagram.

Or

- (b) (i) Give the building blocks of the ER diagram. (6)  
(ii) Discuss about Aggregation, Specialization and Generalization in enhanced ER Model. (7)

12. (a) (i) Explain the basic operators and set operators in Relational Algebra with suitable example. (7)

- (ii) Consider the relational database:

employee(empname, street, city)

works(empname, companyname, salary)

company(companyname, city)

manages(empname, managername)

Write each of the following queries in relational algebra.

- Find the names of all employees who work for city bank corporation. (2)
- Delete the tuples in the works relation for employees of union bank corporation. (2)
- Assume the companies may be located in several cities. Find all the companies located in every city in which state bank corporation is located. (2)

Or

- (b) Explain in detail about the aggregate operators supported in SQL with an illustration.

13. (a) Create a trigger to update count as students register for sports event. Explain the trigger in detail.

Or

- (b) (i) Explain the step-by-step procedure for establishing the database connectivity through ODBC. (7)  
(ii) Discuss about views in SQL and the problems that may arise when updating the views with a suitable example. (6)

14. (a) What are functional dependencies? Explain how primary keys are related to functional dependencies.

Or

- (b) Why normalization is mandatory in database design and Explain various normal forms in detail.

15. (a) (i) Distinguish discretionary from mandatory security. (5)  
(ii) Explain the implementation of access control in distributed databases. (8)

Or

- (b) (i) Explain in detail about binary independence model for Probability Ranking Principle (PRP). (8)  
(ii) Analyze how the query generation probability for query likelihood model can be estimated. (5)

PART C — (1 × 15 = 15 marks)

16. (a) (i) Describe the steps involved in query processing. (5)  
(ii) Let the relations r1 (A, B, C) and r2 (C, D, E) have the following properties: (10)  
r1 has 20000 tuples, r2 as 45000 tuples, 25 tuples of r1 fit on one block and 30 tuples of r2 fit on one block. Estimate the number of block accesses required using each of the following join strategies for  $r1 \bowtie r2$ .
- Nested loop join
  - Block nested loop join
  - Merge join
  - Hash join

Or

- (b) Design an ER model for university enterprise system. Mention the constraints considered by you and explain the steps involved in arriving the model.