Reg. No. | | | | | | | | | | | | |

Question Paper Code : 20013

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Third Semester

Artificial Intelligence and Data Science

AD 3391 – DATABASE DESIGN AND MANAGEMENT

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the disadvantages of file processing systems?
2. List the applications of DBMS.
3. What are the categories of SQL command?
4. What is a candidate key and primary key?
5. List the desirable properties of decomposition.
6. What is meant by normalization of data?
7. What are the ACID properties?
8. What are the different modes of lock?
9. What are the advantages of NoSQL?
10. Write the advantages of object oriented model.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Design a relational database for a university registrar's office. The office maintains data about each class, including the instructor, the number of students enrolled, the time and place of the class meetings. For each student-class pair, a grade is recorded. (6)

(ii) Draw an ER-diagram for the above specified relational database for a university registrar's office. (7)

Or

(b) (i) Explain the 3 schema architecture of DBMS. Why do we need mappings between different schema level? (6)

(ii) Explain the architecture of DBMS. (7)

12. (a) List and explain various DDL, DML and DCL commands in detail with examples. (13)

Or

(b) Explain in brief about Subqueries and Correlated queries. (13)

13. (a) Explain various normal forms in database management systems which are required for fulfilling normalization requirements of an organization. (13)

Or

(b) Explain in detail, the Closure of set of functional dependency and Closure of Attribute sets. (13)

14. (a) Explain in detail two-phase locking and how does it guarantee serializability. (13)

Or

(b) Discuss the concurrency control mechanism in detail using suitable example. (13)

15. (a) Explain mapping an EER Schema to an ODB Schema in detail. (13)

Or

(b) Explain MongoDB-Data Modelling in detail with a real time example. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Consider the following schema :

Suppliers (sid: integer, sname: string, address: string)

Parts (pid: integer, pname: string, color: string)

Catalog (sid: integer, pid: integer, cost: real)

Write appropriate SQL commands to solve the following queries :

(i) Find the names of suppliers who supply some red part.

(ii) Find the sids of suppliers who supply some red or green part.

(iii) Find the sids of suppliers who supply some red part or are at 221 Packer Street.

(iv) Find the sids of suppliers who supply some red part and some green part.

(v) Find the sids of suppliers who supply every part.

Or

(b) Consider the following Schema :

Flights (flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time)

Aircraft (aid: integer, aname: string, cruisingrange: integer)

Certified (eid: integer, aid: integer)

Employees (eid: integer, ename: string, salary: integer)

Write appropriate SQL commands to solve the following queries :

(i) Find the eids of pilots certified for some Boeing aircraft.

(ii) Find the names of pilots certified for some Boeing aircraft.

(iii) Find the aids of all aircraft that can be used on non-stop flights from Bonn to Madras.

(iv) Identify the flights that can be piloted by every pilot whose salary is more than $100,000.

(v) Find the names of pilots who can operate planes with a range greater than 3,000 miles but are not certified on any Boeing aircraft.

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Anna University

for Affilated Engineering College - 2021 Regulation

AID (Artificial Intelligence & Data Science Engineering)

1st Semester | 2nd Semester | 3rd Semester | 4th Semester

5th Semester | 6th Semester | 7th Semester | 8th Semester

Click on Subject/Paper under Semester to enter.

1st Semester

- Professional English - I - HS3152
- Matrices and Calculus - MA3151
- Engineering Physics - PH3151
- Engineering Chemistry - CY3151
- Problem Solving and Python Programming - GE3151

2nd Semester

- Professional English - II - HS3252
- Statistics and Numerical Methods - MA3251
- Engineering Graphics - GE3251
- Physics for Information Science - PH3256
- Basic Electrical and Electronics Engineering - BE3251
- Data Structures Design - AD3251

3rd Semester

- Discrete Mathematics - MA3354
- Digital Principles and Computer Organization - CS3351
- Database Design and Management - AD3391
- Design and Analysis of Algorithms - AD3351
- Data Exploration and Visualization - AD3301
- Artificial Intelligence - AL3391

4th Semester

- Environmental Sciences and Sustainability - GE3451
- Probability and Statistics - MA3391
- Operating Systems - AL3452
- Machine Learning - AL3451
- Fundamentals of Data Science and Analytics - AD3491
- Computer Networks - CS3591

5th Semester

- Deep Learning - AD3501
- Data and Information Security - CW3551
- Distributed Computing - CS3551
- Big Data Analytics - CCS334
- Elective 1
- Elective 2

6th Semester

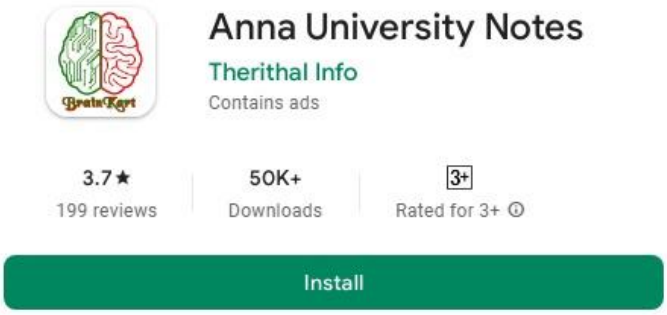
- Embedded Systems and IoT - CS3691
- Open Elective-1
- Elective-3
- Elective-4
- Elective-5
- Elective-6

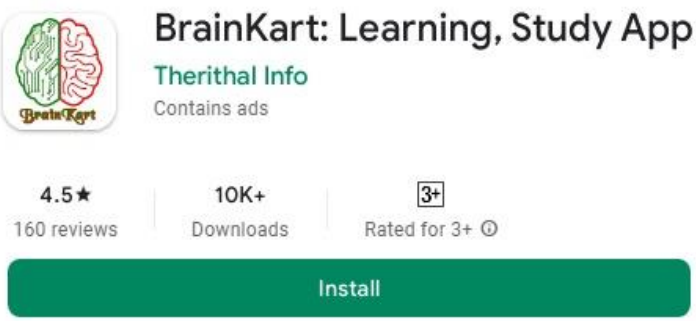
7th Semester

- Human Values and Ethics - GE3791
- Open Elective 2
- Open Elective 3
- Open Elective 4
- Management Elective

8th Semester

- Project Work / Intership





All Computer Engg Subjects - [B.E., M.E.,]		(Click on Subjects to enter)
Programming in C	Computer Networks	Operating Systems
Programming and Data Structures I	Programming and Data Structure II	Problem Solving and Python Programming
Database Management Systems	Computer Architecture	Analog and Digital Communication
Design and Analysis of Algorithms	Microprocessors and Microcontrollers	Object Oriented Analysis and Design
Software Engineering	Discrete Mathematics	Internet Programming
Theory of Computation	Computer Graphics	Distributed Systems
Mobile Computing	Compiler Design	Digital Signal Processing
Artificial Intelligence	Software Testing	Grid and Cloud Computing
Data Ware Housing and Data Mining	Cryptography and Network Security	Resource Management Techniques
Service Oriented Architecture	Embedded and Real Time Systems	Multi - Core Architectures and Programming
Probability and Queueing Theory	Physics for Information Science	Transforms and Partial Differential Equations
Technical English	Engineering Physics	Engineering Chemistry
Engineering Graphics	Total Quality Management	Professional Ethics in Engineering
Basic Electrical and Electronics and Measurement Engineering	Problem Solving and Python Programming	Environmental Science and Engineering