Question Bank for IAT1

1. Describe Main characteristics of DBMS approach and how it is different from the traditional file system.
2. Explain the three-schema architecture with a neat diagram. Why do we need mapping among the schema levels?
3. Explain data models and its types with the help of examples.
4. Describe the database system environment with its component modules and their interactions with a neat diagram.
5. What is a weak and strong entity sets? Explain with example? [2M]
6. Define Entity, Attributes, Entity set, relationship with appropriate notations? [2M]
7. What is Relational Instance, Relational Schema? Give one examples? [2M]
8. Draw the notation for multivalued attributes? Give one example? [2M]
9. What is a data model? List the types of data model used [2M]
10. What are composite attributes? [2M]
11. What does the cardinality ratio specify? [2M]
12. What are the two types of participation constraint? [2M]
13. List any eight applications of DBMS [2M]
    Long Answer Questions
14. Define Database? Discuss about applications of Database Systems? [5M]
15. Discuss about the purpose of Database Systems? [5M].
16. Define Instance and Schema? List different data models and explain? [5M]
17. Explain about Database languages with examples? [10M]
18. Draw the Architecture of Database? [5M]
19. Discuss about Database users and Administrators? [5M]
20. Draw ER diagram for bank databases with 5 entities [5M]
21. Discuss about key constraints for Ternary Relationships? [5M]
22. Draw the ER diagram for a company needs to store information about employees
23. Explain about integrity constraints over relations? [10M]
24. Construct an Entity-Relationship (E-R) diagram for a Movie Database considering the following entities, attributes, and relationships. Represent the entities, attributes, relationships, and cardinalities accurately using standard notations. Entities and Attributes: Movie (Movie_ID, Title, Release_Year, Genre, Language, Duration) Production House (Production_ID, Name, Established_Year, Country) Director (Director_ID, Name, Date_of_Birth, Nationality) Actor (Actor_ID, Name, Date_of_Birth, Gender, Nationality) Role (Role_ID, Character_Name, Actor_ID, Movie_ID) Award (Award_ID, Name, Category, Year, Winner_ID)
25. For the Movie database given in above, Write relational algebra queries for the following. 1. Retrieve all movies that belong to the "Action" genre. 2. Retrieve the names of all production houses. 3. Retrieve the title and release year of all movies that were released in 2020.
26. For the Movie database given in above, Write SQL query for the following. 1. Retrieve the Movie Title and Release Year of all movies released after 2018. 2. Retrieve the

names of all directors from the database. 3. Retrieve all details of movies that belong to the "Comedy" genre.

27. Construct an Entity-Relationship (E-R) diagram for a COMPANY Database considering the following entities, attributes, and relationships. Represent the entities, attributes, relationships, and cardinalities accurately using standard notations. Entities and Attributes: 1. EMPLOYEE (Name, Ssn, Bdate, Address, Sex, Salary, Supervisor_ssn, Dno) 2. DEPARTMENT(Dname, Dnumber, Mgr_ssn, Mgr_start_date) 3. DEPT_LOCATION(Dnumber, Dlocation) 4. PROJECT(Pname, Pnumber, Plocation, Dnum) 5. WORKS_ON(Essn, Pno, Hours) 6. DEPENDENT(Essn,Dependent_name,sex,Bdate,Relationship)
28. For the Company database given in above, Write Relational algebra query for the following. 1. Retrieve the names and salaries of all employees who earn more than 50,000. 2. Find the names of employees who work 3 hours. 3. Retrieve the project names and department names for all projects.
29. For the Company database given in above , Write SQL query for the following. a) List female employees from DNo =20 earning more than 50000. b) Retrieve the names and salaries of all employees who work in department number 5. c) Increase the salary of all employees in Department 2 by 10%. d) For each dept, retrieve the dept number, number of employees in dept, and their average salary. e) Delete all employees who have a salary less than 30,000.
30. Explain the following. i) Database Schema and Database State ii) Participation Constraints iii) Recursive Relationships and Role names. iv) Cardinality Ratio v) Primary Key vi) Candidate Key vii) Foreign Key
31. Explain the select, project, union, intersection, set difference, Cartesian product and join operations in relational algebra with suitable example.
32. Demonstrate the usage of the following SQL commands by writing and executing appropriate queries on a sample database: i) INSERT, ii) DELETE, iii) UPDATE, iv) ALTER, v) SELECT
33. What are aggregate functions ? give an example
34. Draw an E R diagram for a hospital database with 6 entities.
35. Write a note on comparative study on data which is stored in traditional or ancient methods in real time.