

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Model Question Paper with effect from 2022-23 (CBCS Scheme)

Fourth Semester B.E. Degree Examination Subject Title: Database Management Systems

Time: 03 Hours

Max. Marks: 100

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

| Module - 1 | | | Bloom's Taxonomy Level | Marks |
|-----------------|---|---|------------------------|-------|
| Q. 1 | a | Discuss the characteristics of Database approach. | L2 | 6M |
| | b | Define the following terms: i)Database ii) DB Catalog iii)Entity iv) Degree of Relationship | L1 | 4M |
| | c | Explain the Component Modules of DBMS and their interaction with the help of a diagram | L2 | 10M |
| OR | | | | |
| Q. 2 | a | Describe the three schema Architectures. Give the importance of mapping between the schema levels. | L2 | 6M |
| | b | What are the different types of attributes? Explain with examples. | L1,L2 | 6M |
| | c | Develop an ER diagram for keeping track of information about a company database taking into accounts at least five entities. | L3 | 8M |
| Module-2 | | | | |
| Q. 3 | a | Give the types of constraints in the relational model, brief about each of them. | L2 | 8M |
| | b | What are the update operations on Relations, explain. | L1,L2 | 6M |
| | c | Discuss about Unary Relational operations; write their forms (notations). | L2 | 6M |
| OR | | | | |
| Q. 4 | a | Describe the Equijoin and Natural join with suitable example. | L2 | 6M |
| | b | Explain how aggregate functions and Grouping functions are specified in relational model. | L2 | 6M |
| | c | For the following Relational schemas: Sailors (sid, sname, rating, age) Boats(bid, name, color) Reserves(sid, bid, day) Specify the following queries in Relational Algebra i) Find names of sailors who've reserved boat #103 ii)Find names of sailors who've reserved a red and a green boat iii)Retrieve the colors of boats reserved by Rakesh iv) Find names of sailors who have ratings at least 8. | L3 | 8M |
| Module-3 | | | | |
| Q. 5 | a | Discuss the schema change statements in SQL with examples. | L2 | 6M |
| | b | Define SQLJ and how is it different from JDBC? | L4 | 6M |
| | c | Describe Database stored Procedures. Explain Creating and calling procedure with example. | L2,L3 | 8M |
| OR | | | | |
| Q. 6 | a | Brief about JDBC Drivers | L3 | 6M |

| | | | | |
|-----------------|---|---|-------|-----|
| | b | With a neat diagram explain three tier Architecture Database Applications | L3 | 8M |
| | c | Write a short note on: i) CGI ii) Application Servers | L3 | 6M |
| Module-4 | | | | |
| Q. 7 | a | What is functional dependency? Explain the inference Rules for functional Dependency? | L1,L2 | 6M |
| | b | Describe 1NF, 2NF and 3NF with suitable examples. | L2 | 6M |
| | c | Consider the schema R=ABCD, subjected to FDs $F=\{A \rightarrow B, B \rightarrow C\}$ and the non binary partition $D1=(ACD, AB, BC)$. State whether D1 is a lossless decomposition? | L3 | 8M |
| OR | | | | |
| Q. 8 | a | Explain Insertion, Deletion and Modification anomalies. Why they are considered bad? | L2,L3 | 6M |
| | b | Write the algorithm to find minimal cover for set of FDs, Consider $R\{A,B,C,D,E,F\}$, FDs $\{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$. Find the irreducible(minimal) cover for this set of FDs. | L3 | 8M |
| | c | Explain Insertion, Deletion and Modification anomalies. Why they are considered bad? | L2,L3 | 6M |
| Module-5 | | | | |
| Q. 9 | a | With the help of relevant diagram explain Interleaved processing and parallel processing. | L3 | 8M |
| | b | Discuss different types of locks used in concurrency control | L2 | 6M |
| | c | Explain how shadow paging helps to recover from transaction failure. | L2 | 6M |
| OR | | | | |
| Q. 10 | a | Explain Multi-version concurrency control protocol | L2 | 10M |
| | b | Write short note on the following i)Transaction roll back and cascading rollback ii) Transaction support in SQL iii)No- UNDO/REDO recovery based on differed update iv)Recovery technique based on Immediate update v)ARIES Recovery algorithm | L2 | 10M |
