**Bharati Vidyapeeth's**
**Institute of Computer Applications and Management**
**A-4, Paschim Vihar, New Delhi-63**
**Model Question Paper-I [Sem-II]**

| Paper Code: MCA - 108 | Subject: Database Management Systems |
|---|---|
| Time: 3 Hours | Maximum Marks: 75 |

**Note: Attempt FIVE questions in all. Question No. 1 is compulsory and attempt one question from each unit.**

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| 1. | | Answer all the following questions briefly:- | 2.5 x 10 = 25 |
| | (a) | Convert the following SQL query into its relational algebra equivalent<br>Select deptno, eno from employee where eno=e001 | |
| | (b) | Examine the significance of physical data independence? | |
| | (c) | Differentiate between fine granularity and coarse granularity when locking a data item? | |
| | (d) | Compare procedures and functions in PL/SQL. | |
| | (e) | How recovery from deadlock is done in DBMS during transaction management. | |
| | (f) | Explain the concept of checkpoints in recovery. | |
| | (g) | What do you mean by tablespaces in oracle? | |
| | (h) | Create a view on student relation which consists of sname, course and date_of_birth attributes of rollno>101 and related record. | |
| | (i) | What is 2PL? Also discuss its variants. | |
| | (j) | List the different attributes of a cursor? | |

### UNIT – I

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| 2. | (a) | Explain the difference between Hierarchical and Network models. Give examples to support your answer. | 6 |
| | (b) | Discuss a case where aggregation is preferred over ternary relationship. | 6.5 |
| 3. | (a) | What are weak entities? And with example show how they are converted into strong entities? | 6 |
| | (b) | Write notes on (Any Two) :<br>1. Roles of DBA<br>2. Query Processor<br>3. Mapping between views | 6.5 |

### UNIT – II

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| 4. | (a) | Discuss the difference between Relational Algebra and SQL. Also write some operators of relational algebra. | 6 |
| | (b) | What is an anomaly? Explain insert, update and delete anomalies with a suitable example. | 6.5 |
| 5. | (a) | For given relation R={A,B,C,D,E}<br>FDs={A→BC, CD→E, B→D, E→A}. Find Primary Key and normalize till 3 NF. | 6 |
| | (b) | Consider a relation R (A B C D E F ) with following FDs:<br>F ={A→BC , C→A, D→E,F→A, E→D}<br>Is the decomposition of R into R1(A C D), R2(B C D) and R3(E F D) lossless? | 6.5 |

| 6. | (a) | Write a Cursor( PL/SQL code) to display the Employee_name, Dateofbirth ,Designation whose basic salary is greater than 4000 from Employee_master. If record not found then display the proper message. | 6 |
|---|---|---|---|
| | (b) | Explain the following terms in Oracle system: <br> 1. Log files <br> 2. Segments and extents <br> 3. Database files | 6.5 |
| 7. | (a) | Write the syntax of following built-in functions in SQL: <br> Instr()    to_date()    initcap()    power()    mod()    exp() | 6 |
| | (b) | Create a trigger to store backup of old salary in back_up_emp if there is any change in salary of any employee in Employee_master. | 6.5 |

**UNIT – IV**

| 8. | (a) | Explain the reference architecture of Distributed database systems. | 6 |
|---|---|---|---|
| | (b) | What benefits does rigorous two-phase locking provide? How does it compare with other forms of two phase locking? | 6.5 |
| 9. | (a) | What is deadlock? How can deadlock be avoided? | 6 |
| | (b) | Discuss serializable schedules? How can we ensure that a given schedule is serializable? | 6.5 |