

(3 Hours)

[ Total Marks : 80

- N. B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **three** questions out of remaining **five** questions.  
 (3) Draw **neat** labelled diagram wherever **necessary**.

1. (a) Explain the deadlock in database. 5  
 (b) Explain BLOB and CLOB with example. 5  
 (c) Explain OODBMS and ORDBMS. 5  
 (d) What is Database security ? 5
  
2. (a) Consider the relation  $r(X, Y, Z, W)$  and Set  $F\{Y \leftrightarrow W, XY \rightarrow Z\}$  where the symbols  $\leftrightarrow$  means that  $Y \rightarrow W$  and  $W \rightarrow Y$  simultaneously. 10  
 What are the candidate keys of this relation and what is the highest normal form of this relation.  
 (b) Explain the role of Database Administrator with respect to performance and database tuning. 10
  
3. (a) Consider the following relation :- 10  
 EMP (eno, ename, title)  
 PROJ (pno, pname, budget, location)  
 PAY (title, salary)  
 ASG (eno, pno, responsibility, duration)  
 (i) Write the query for derived horizontal fragmentation on EMP relation and PAY relation.  
 (ii) Fragment the EMP, PROJ and PAY relation vertically and write the resultant fragment.  
 (b) Explain the concurrency control in distributed database. 10
  
4. (a) Write and explain a ODL schema for University database. 10  
 (b) What are the type constructor and explain the different types of type constructor with the help of example. 10
  
5. (a) What is Data warehousing and explain the architecture of data warehousing ? 10  
 (b) Design a star and snow flake schema for a college Examination Database system. 10
  
6. Write a short notes (any two):- 20  
 (a) Temporal database  
 (b) Client / Server Model  
 (c) Multimedia database  
 (d) Web database.