

Time: 3 Hours

Total Marks: 80

- N.B. (1) Question No. 1 is compulsory
(2) Assume suitable data if necessary
(3) Attempt any three questions from remaining questions



- 1 (20)
- (a) List and explain operation on files.
 - (b) Explain various join operations.
 - (c) List and explain allocation techniques for distributed databases.
 - (d) What is the need of object oriented database?
 - (e) Enumerate the security issues involved in database design.
- 2 (a) Explain heuristic query optimization with given example: (10)
- Select e_lname
from employee e, works_on w, project p
where p.name="database" and p.number=w.pno and
e.ssn=w.ssn and e.bdate >"1997-12-31"
- (b) Explain concurrency control in distributed database. (10)
- 3 (a) Consider the following database that has to be distributed: (10)
- Proj (PNO, PNAME, BUDGET)
PAY (TITLE, SALARY)
EMP (ENO, ENAME, SALARY)
ASG (ENO, PNO, RESPONSIBILITY, DURATION)
- (i) Show 2 examples of horizontal fragmentation.
 - (ii) Show 2 examples of vertical fragmentation.
 - (iii) Show 1 example of derived fragmentation.
- (b) Give difference between Document Oriented Database and Traditional Database. (10)
- 4 (a) What are the steps involved in query processing? Why queries are to be optimized? (10)
- With an example explain how queries are optimized.
- (b) Draw and explain mobile computing architecture with respect to mobile database. (10)
- 5 (a) Explain hashing techniques in detail. (10)
- (b) Explain discretionary access control based on granting and revoking privileges. (10)
- 6 Write short note on (any two) (20)
- (a) Measures of query cost
 - (b) Two phase commit protocol
 - (c) Document oriented database
 - (d) Multimedia databases