

(3 Hours)

QP Code : 5067

[Total Marks: 80]

- N.B. : (1) Question No. 1 is compulsory.
 (2) Answer any **three** out of the **remaining** questions.

Q.1 Consider following global schema of an company database who keep track of company's employees , department and projects.

EMP

ENO	ENAME	TITLE
E1	JOHN	Elect Eng
E2	SAM	Syst. Anal.
E3	TOM	Mech Eng
E4	SMITH	Programmer
E5	DAVID	Syst. Anal.
E6	GAYLE	Elect Eng.
E7	JACK	Mech Eng.
E8	HARRY	Sys Anal

ASG

ENO	PNO	RESP	DUR
E1	P1	Manage	12
E2	P1	Analyst	24
E2	P2	Analyst	5
E3	P3	Consultant	10
E3	P4	Engineer	48
E4	P2	Programmer	18
E5	P2	Manager	24
E6	P4	Manager	48
E7	P3	Engineer	36
E8	P3	Manager	40

PROJ

PNO	PNAME	BUDGET	LOC
P1	e-commerce	150000	Delhi
P2	Database	135000	Mumbai
P3	ERP	250000	Mumbai
P4	CAD/CAM	310000	Pune

PAY

TITLE	SAL
Elect Eng.	40000
Syst. Anal.	34000
Mech Eng	27000
Programmer	24000

- Perform Primary Horizontal Fragmentation (PHF) of relation PROJ with pname and budget of projects given their number issued at three sites and access project information according to budget one site accesses ≤ 200000 other accesses > 200000 . [06]
- [a]
- Explain how the above resulting PHF fulfill the correctness rules of fragmentation. [04]
- [b]
- Perform Derived Horizontal Fragmentation (DHF) of relation EMP with respect to PAY $\{p_1: sal > 30000 \text{ and } p_2: sal \leq 30000\}$ [06]
- [c]
- Explain how the above resulting DHF fulfill the correctness rules of fragmentation. [04]
- [d]
- Q.2 [a] Draw and Explain model of transaction management in DDB. [10]
- [b] Explain Following transparency for distributed database. [10]
- (i) Network Transparency (ii) Replication Transparency (iii) Fragmentation Transparency

[TURN OVER

- Q.3 [a] Draw and explain Layers of Query Processing in distributed database. [10]
[b] What is query optimization? List distributed query optimization algorithms and explain any one from that. [10]
- Q.4 [a] University database contains information about the course and the Professors who teach the courses in each semester. Each course must also have information about the number of student enrolled, room no. data and time (when and where the course is conducted) [10]
i) Write DTD rules for above XML documents.
ii) Create an XML schema for above XML documents.
[b] Describe any two methods for deadlock detection in distributed database? [10]
- Q.5 [a] Explain Timestamp-based concurrency control mechanisms in DDB. [10]
[b] State the purpose of 2PC protocol. Explain 2PC in detail. [10]
- Q.6 Write Short notes on (Any Two) [20]
a) Architecture of Heterogeneous database
b) Affinity Matrix
b) Design issue of Distributed Database.
c) Distributed Database Architecture

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