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**Question Paper Code : X 10316**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020/  
APRIL/MAY 2021  
Third/Fourth/Fifth Semester  
Computer Science and Engineering  
CS8492 – DATABASE MANAGEMENT SYSTEMS  
(Common to Computer and Communication Engineering/Mechanical and  
Automation Engineering/Information Technology)  
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. State the three levels of data abstraction.
2. What are the various types of keys in the database ?
3. Define functional dependency.
4. What is E-R diagram ?
5. List the ACID properties and its usefulness.
6. What benefit does strict two-phase locking provide ? What are the disadvantages of it ?
7. State the storage device hierarchy.
8. What are the factors needed to evaluate the technique of ordered indexing and hashing ?
9. Give the DTD for an XML representation of the following nested-relational schema.  
*Emp = (ename, ChildrenSet setof (Children), SkillsSet setof(Skills))*  
*Children = (name, Birthday)*  
*Birthday = (day, month, year)*  
*Skills = (type, ExamsSet setof (Exams))*  
*Exams = (year, city)*
10. What is the difference between a false positive and false drop ?



11. a) State and explain the architecture of DBMS. Discuss about the people who deals with database.

(OR)

- b) What are the several parts of SQL query language ? What are the basic built in types used during SQL create statement ? State and given example for the basic structure of SQL queries.

12. a) Explain the following terms briefly : attribute, domain, entity relationship, entity set, relationship set, one-to-many relationship, many-to-many relationship, participation constraint, overlap constraint, covering constraint, weak entity set, aggregation and role indicator.

(OR)

- b) Consider the following relations :

Sailors (sid:integer, sname:string, rating:integer, age:real)

Boats (bid:integer, bname:string, color:string)

Reserves(sid:integer, bid:integer, day:date)

Write the SQL statement for the following queries :

- i) Find all sailors with a rating above 7. **(3)**
- ii) Find the sids of sailors who have reserved a red boat. **(3)**
- iii) Find the colors of boats reserved by lubber. **(4)**
- iv) Find the names of sailors who have reserved at least one boat. **(3)**

13. a) State and explain the transaction isolation level.

(OR)

- b) What are the two approaches of deadlock prevention ? Explain in detail with suitable example.

14. a) Describe the procedure for index update for single level indices with example.

(OR)

- b) Explain dynamic hashing with example.

15. a) What are the reasons for building distributed database ? Discuss the relative advantages of centralized and distributed databases. Explain the difference between fragmentation, replication and location transparency.

(OR)

- b) State and explain the persistent programming languages.



16. a) Construct a B+ tree for the following set of key values :

(2, 3, 5, 7, 11, 17, 19, 23, 29, 31)

Assume that the tree is initially empty and values are added in ascending order. Construct B+ trees for the cases where the number of pointers that will fit in one node is as follows :

- a) Four
- b) Six
- c) Eight.

(OR)

- b) i) Write an algorithm to find closure of functional dependents. **(5)**
- ii) Compute the closure of the following set F of functional dependencies for relation schema  $R = (A, B, C, D, E)$  **(10)**

$A \rightarrow BC$

$CD \rightarrow E$

$B \rightarrow D$

$E \rightarrow A$

List the candidate keys for R.

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