

**BACHELOR OF COMPUTER APPLICATIONS
(BCA) (Pre-Revised)**

00595

Term-End Examination

December, 2016

CS-06 : DATABASE MANAGEMENT SYSTEMS

Time : 3 hours

Maximum Marks : 75

Note : *Question number 1 is compulsory. Attempt any three questions from the rest.*

1. (a) The people's bank offers five types of accounts : loan, checking, premium savings, daily interest saving and money market. It operates a number of branches and a client of the bank can have any number of accounts. Accounts can be joint. Identify the entities of interest and show their attributes. What relationships exist among these entities ? Draw the corresponding ERD. 10
- (b) What are M-Way Search Trees and how can they be used for Indexing ? 5
- (c) Consider the following set of FDs :
A → BC, AB → CD, B → D, D → E, BC → D
Remove the redundant FDs from the set.
Identify the possible candidate keys. 5

- (d) Describe the Network Model and its implementation. 5
- (e) What is Referential Integrity ? Describe with the help of an example. 5
2. Consider the following tables :
- S (S#, Sname, Status, City)
- SP (S#, P#, Quantity)
- Write SQL Queries for the following : 15
- (a) Get supplier numbers and status for suppliers in Paris, in descending order of status.
- (b) Get unique Sname for suppliers who supply part P2.
- (c) Get all pairs of supplier numbers such that the two suppliers are located in the same city.
- (d) Get supplier numbers for suppliers with status > 20 and city is New York.
- (e) Get the number of suppliers who are supplying at least one part.
3. (a) What is ISAM ? Describe the various types of Indexes. 10
- (b) What are Views ? Describe with the help of an example. 5

4. (a) Explain the differences between a weak entity and a strong entity with the help of an example. 5
- (b) Consider the following data :
{D, H, K, Z, B, P, Q, E, A, S, W, T, C, L, N, Y, H}
Create a B-Tree of order 5 to insert the above data. 10
5. (a) Suppose you are given a relation
 $R = (A, B, C, D, E)$
with the following functional dependencies :
{ $CE \rightarrow D, D \rightarrow B, C \rightarrow A$ }
- (i) Find all candidate keys.
- (ii) Identify the best normal form that R satisfies (1NF, 2NF, 3NF or BCNF).
- (iii) If the relation is not in BCNF, decompose it until it becomes BCNF. At each step identify a new relation, decompose and re-compute the keys and the normal forms they satisfy. 9
- (b) Describe the View Updating Rule and the Integrity Rule. 6
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