

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

Term-End Examination

December, 2015

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) Assume there is the following requirement for a distance learning educational institution :

The institution offers different Post-Graduate, Graduate and Diploma level programmes. The programme delivery is done through local learning centres, using TV and Radio Broadcast. Schedule of programme delivery is sent to all the students at the beginning of each semester. Students registration records are managed by local learning centres.

Design an ER diagram for the system indicating all the entities, attributes, keys and cardinality. Make necessary assumptions wherever required.

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- (b) Explain three models of database systems. What are the properties of a relation in a Relational model ? 8
- (c) Explain the following relational algebra operations with suitable examples : 6
- (i) Selection
- (ii) Projection
- (iii) Cartesian product
- (d) What are the problems of file management system ? Explain, how does the database system overcome the problems of file management system. 6
2. (a) Explain the advantages of object oriented database management system over relational database management system. 5
- (b) Consider the following relations, where the primary keys are underlined :
- TRAIN (T_Number, Start_Station, Dest_Station, Name)
- TICKET (PNR_No, Boarding_Station, Dest_Station, T_Number, Class, Fare)
- PASSENGER (Name, Address, PNR_No, Seat_No)

Write the following queries in SQL :

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- (i) Retrieve the names of all the passengers who are going from Delhi to Jaipur by Train number T1001 in AC-2 Class.
- (ii) Insert a new train with Train number T2002 from Delhi to Mumbai.
- (iii) Cancel a ticket with PNR_No : 22005567, and passenger name "Ravi".
- (iv) List all the trains that start from Mumbai with destination Delhi.
- (v) List all the passengers' names who are travelling by Train number T2011 and their fare is greater than ₹ 1000.

3. (a) What is distributed database system ? Explain how data replication is managed/avoided in distributed databases, with an example.

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(b) What is integrity constraint ? Explain two types of integrity constraints which may be imposed on a relational database.

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(c) Explain the role and responsibilities of a database administrator.

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4. (a) Explain frame based knowledge representation. Make the frame representation of a "Doctor". 5
- (b) What is checkpoint ? Explain the advantage of using checkpoints in database recovery, with an example. 5
- (c) What is a view ? Explain why a view of a table is created. Briefly explain two disadvantages of using view. 5
5. (a) What is direct file organisation ? Explain the advantages and disadvantages of hashing with the help of an example. 10
- (b) What is functional dependency ? Explain with the help of an example and dependency diagram. 5
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