END TERM EXAMINATION

THIRD SEMESTER **[MCA]** DECEMBER **2007**

Paper Code: MCA203 **Subject: Data Base Management System**

Time : 3Hours **Maximum Marks : 60**

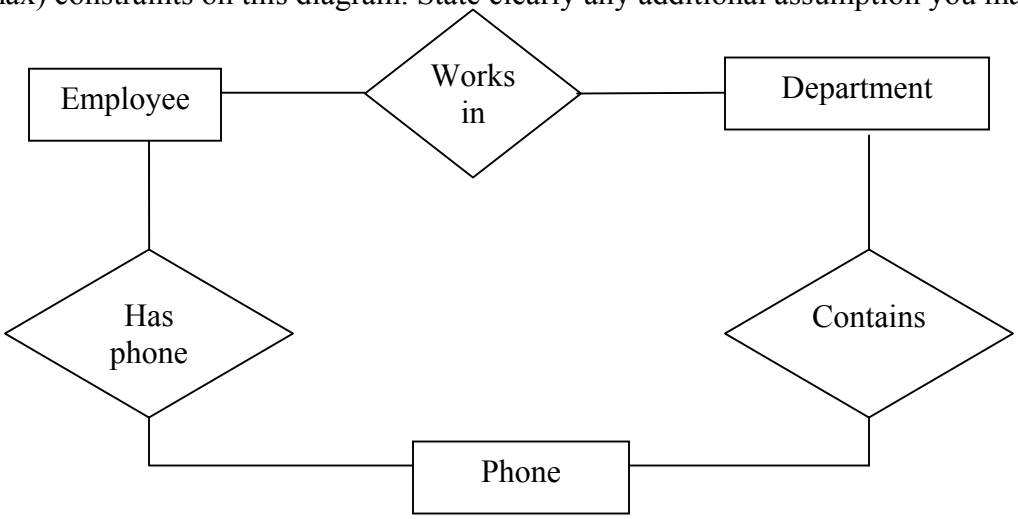
Note: Q.1 is compulsory. Attempt any four questions from the rest.

Q.1 (a) What is Referential Integrity Constrain? Explain.
(b) What is recursive relationship? Explain with the help of suitable example.
(c) Discuss two main types of constraints on generalization and specialization.
(d) What is the dependency preservation property for decomposition? Why is it important?
(e) What is a Minimal set of functional dependencies? Illustration with an example.

Q.2 (a) Consider the universal relation R. R={A, B, C, D, E, F, G, H, I, J}, and F={AB→C, A→DE, B→F, F→GH, D→IJ}. What is the key for R? Decompose R into 2NF and then 3NF relations.

(b) Consider a relation R (A B C D E) with F={AB→C, CD→E, DE→B}. What is the key for R?

Q.3 (a) Consider the ER diagram given below: - Assume that an employee may work in up to two Department or may not be assigned to any department or may not be assigned to any Department. Each department must have one and upto three phone numbers. Supply (min, max) constraints on this diagram. State clearly any additional assumption you make.



(b) When the concept of weak entity is used in data modeling? Define the term owner entity is type, identifying relationship and partial key.

Q.4 Consider the following relation for order processing database: -
CUSTOMER (Cust #, C name, city)
ORDER (Order #, Odate, Cust #, Ord-amt)
ORDER_ITEM (Order #, item #, Qty)
ITEM (item #, Unit-price)
SHIPMENT (Order #, Warehouse #, ship-date)
WAREHOUSE (Warhouse #, City)
Write the following queries in SQL form.
(a) List the order # and ship-date for all orders shipped from Warehouse #'W2'.
(b) List the orders that were not shipped within 30 days of ordering.

(c) List the order # for the orders that were shipped from all warehouse that the company have in 'New York'.

(d) List the Warehouse information from which the customer name 'Deepak Chandra' was supplied his order.

Q.5 (a) Which of the following schedule is serializeble? For a serializable schedule determine its equivalent serial schedule.

(i) $r_1(x)$; $r_3(x)$; $w_1(x)$; $r_2(x)$; $w_3(x)$

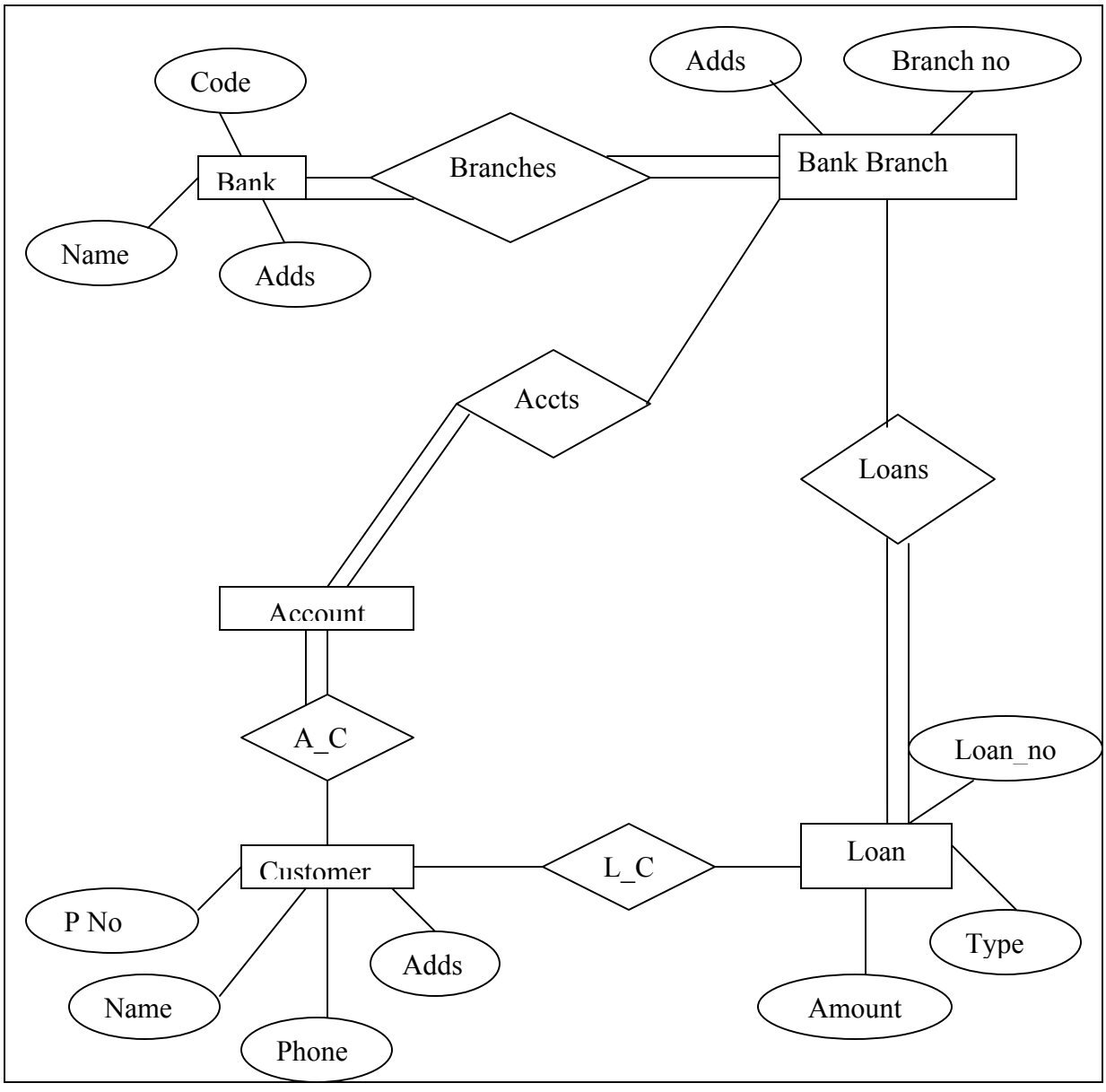
(ii) $r_1(x)$; $r_3(x)$; $w_3(x)$; $w_1(x)$; $r_2(x)$

(b) Why is two-phase locking not used as a concurrency control method for indexes such as B^+ trees?

Q.6 (a) Describe the write-ahead logging protocol.

(b) What is the meant by transaction role back? What is meant by cascading roleback? Why do practical recovery methods use protocols that do not permit cascading roleback?

Q.7 Map the following E-R model into corresponding relation schema. Also mention the primary key and foreign key for each relation.



An ER diagram for BANK database