RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. THIRD SEMESTER EXAMINATION, DECEMBER 2011

SECOND YEAR

Date : 24/12/2011 **COMPUTER SCIENCE (General)**

Time : 10.30am – 12.30pm Paper : III Full Marks : 50

Answer **any five** out of the following questions:

1. a) Compare and contrast between RISC and CISC architecture. 4
   b) Describe Direct, Indirect, Register and Displacement addressing mode with suitable examples. 6

2. a) Represent the number –35 in sign magnitude and 2's complement representation. Can this number be represented in 1's complement? 3
   b) Illustrate Booth's algorithm to multiply two 4 bits number with a suitable example. 7

3. a) Given the relational schemas:
   BOOK (BOOKID, TITLE, AUTHOR, SUBJECT)
   BORROWER (BID, BNAME)
   BORROWS (BOOKID, BID, ISSUE DATE, RETURN DATE)
   Now write the Relational Algebra from the following:–
   i) List all books of 'physics' and 'mathematics'. 3
   ii) Find the name of the borrower who borrows book of 'Moris Mano'. 3½
   b) List the book names of subject 'Computer Science' which are issued on 12/12/2011. 3½

4. a) What are the disadvantages of conventional file base system over DBMS? 6
   b) What do you mean by DML & DDL? 4

5. a) What do you mean by Foreign key? Compare it with primary key of a relation. 2
   b) Illustrate 3-schema architecture with a suitable diagram. 2
   c) What do you mean by redundancy problem in database? How can you solve this problem? 3+3

6. a) What do you mean by indexing? Compare and contrast between clustered and non-clustered index. 2+2
   b) Describe different types of clustered indexing technique with suitable examples in brief. 6

7. a) Suppose a compute architecture can store a floating point data in the following format:

Sign bit	Exponent	Significant
1 bit	5 bits	12 bits

   Now state a procedure to store a floating point number from the above format using the above, can we store the floating point number 1.011×2^{101}? 5
   b) What do you mean by functional dependency? 2
   c) Consider a relation $R(A, B, C, D, E)$ with the following dependencies $AB \rightarrow C,\ CD \rightarrow E,\ DE \rightarrow B$. Find the candidate key of this relation *R*. 3

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