MCA (Revised)
Term-End Examination
June, 2008

MCS-034 : SOFTWARE ENGINEERING

Time : 3 hours   Maximum Marks : 100

(Weightage 75%)

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

1. (a)   Differentiate between white box testing and black box testing. Explain the methods for conducting white box testing.   10

    (b)   What is meant by software metric ? Explain the parameters for software measurement. Also, mention some common software measures.   10

    (c)   What is meant by coupling in software design ? Explain different types of coupling. Differentiate between loosely coupled and tightly coupled systems with a suitable example for each.   10

    (d)   How does software reengineering improve the software quality ? Explain the phases of software reengineering life cycle.   10

2. (a)   What is the importance of Software Configuration Management (SCM) ? Also, discuss the role of CASE tools in software project management.   10

    (b)   "Capability Maturity Models emphasise on software quality and process maturity." Justify and comment on the statement.   10

3. (a) Explain how software quality and software design process are highly inter-related. Also, explain the main phases and processes of software design. **10**

   (b) Compare different cost estimation models based on their advantages and disadvantages. **10**

4. (a) What is coverage-based testing ? Mention the criteria for conducting coverage-based testing. Consider the following program for finding the GCD for the given two numbers x and y.

   ```
   int gcd (x, y)
   int x, y;
   {
     while (x! = y)
      { if (x > y)
          x = x − y;
          else y = y − x;
      }
     return (x);
   }
   ```

   Make the test cases for the various coverage criteria for the above program. **10**

   (b) Differentiate between functional and non-functional requirements. Explain the various problems associated with requirement analysis. **10**

5. An office needs to develop a software to automate the Visitor Registration System in its office. Whenever a visitor wants to meet any staff member in the office, the system will record the name of the visitor, name of the staff, time of entry, purpose of visit and time of exit. The system also should have the following requirements :

- To display the names of all visitors to a staff member daywise.

- To display the time spent by a particular visitor in the office.

- To display the names of all visitors who are in office at a particular time.

For the above mentioned requirements

(a)   Develop a System Requirement Specifications (SRS).

(b)   Design Zero level, First level and Second level DFDs.

(c)   Design an ER Diagram.   20

Note :   Make suitable assumptions, if necessary. Also, write the assumptions made.