Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech(CSE)/SEM-1/MTCSE-14/2012-13

2012

ADVANCED SOFTWARE ENGINEERING

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

PART – I

Answer any *five* of the following. 5 × 5 = 25

1. Briefly describe the system procurement process with a block diagram.

2. Explain Requirement Engineering process. What is the advantage of focused ethnography ? 3 + 2

3. Write a note on Component Based Software Engineering. What are the main drawbacks of evolutionary process model ? 3 + 2

4. Explain user interface design process.

5. In the development of large, embedded real-time systems, suggest five factors that are likely to have a significant effect on the productivity of the software development team.

6. Consider the following program :

```
int compute_gcd (int x, int y)
{
while (x! = y )
{
          if (x > y) then
          x = x – y;
    else
          y = y – x;
   }
       return x;
}
```

Draw the control flow graph and find the cyclomatic complexity of the above program. 3 + 2

7. Explain why testing can detect the presence of errors, not their absence. What do you understand by clean room strategies for software development ? 2 + 3

PART – II

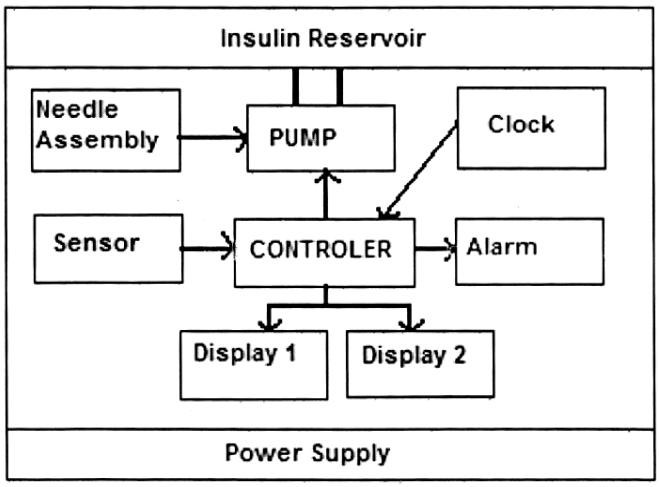
Answer any *three* of the following. 3 × 15 = 45

8. a) Based on your experience with a bank ATM, draw a data-flow diagram modelling the data processing involved in various transactions by a customer.

   b) Develop a sequence diagram showing the interactions involved when a student registers for a course in a university. Courses may have limited enrolment, so the registration process must include checks that places are available. Assume that the student accesses an electronic course catalogue to find out about available courses. 8 + 7

9. a) Write the difference between functional requirements and domain requirements with examples.

   b) Identify the risks and make a fault tree analysis of the given safety critical systems :



   c) What are the different organizational styles in Software Design Phase ? 3 + 8 + 4

10. a) Explain what you understand by Extreme Programming with the help of an XP process diagram.

   b) Do you think a test plan is essential for software testing process ? Justify. Explain about the essential components of a test plan. 7 + 2 + 6

11. What factors should be taken into account when selecting staff to work on a software development project. Give reasons for your answer. As a project manager in a company for software development related to alarm systems suggest what skills and attributes you will look for while selecting a lead team of 6 developers. 9 + 6

12. Explain P-CMM. What are the strategic objectives of P-CMM ? Why is P-CMM an effective framework for improving the management of people in an organization ?

6 + 5 + 4

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