AUTUMN END SEMESTER EXAMINATION-2017

5th Semester B.Tech & B.Tech Dual Degree

SOFTWARE ENGINEERING

IT-3003

(Regular-2015 & Back of Previous Admitted Batches)

Time: 3 Hours Full Marks: 60

Answer any SIX questions including question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. (a) What is software engineering? [2 × 10]

   (b) What is software reliability?

   (c) Why Spiral model is known as Meta model?

   (d) What are the characteristics of a good SRS document?

   (e) What do you understand by the term "Software Crisis"? List the causes of it?

   (f) What is Function Point Metric? What factors we consider for this metric?

   (g) Differentiate between Empirical estimation and Heuristic techniques.

   (h) What is the difference between verification and validation?

   (i) Differentiate between code walk-through and code inspection.

   (j) What do you mean by the terms "ambiguous requirement" and "inconsistent requirement"? Support one example for each of these.

2. (a) Suggest a suitable life cycle model for a software project where several kinds of risks are difficult to anticipate at the start of the project. Justify your answer and explain all phases of the proposed model in detail with schematic diagram. [4]

(b) What are the steps involved in project planning? Explain them briefly. [4]

3. (a) What is LOC? How does one estimates LOC of a Software product? List two short comings of LOC. [4]

(b) How CMM is different from ISO? Discuss about the KPA's present in various CMM levels. [4]

4. (a) What do you mean by the term cohesion and coupling in the context of software design? Explain any two different types of cohesion and coupling with examples. [4]

(b) Explain in details the basic COCOMO model. Why COCOMO model preferred over other available models. [4]

5. (a) What do you mean by testing? Discuss about following testing strategies for black box testing with suitable example. [4]
(i) Equivalent class partitioning (ii) Boundary value analysis

(b) Draw the CFG and find out the cyclomatic complexity of the following codes. [4]

```
int BinSearch (char *item, char *table[], int n)
{
int bot = 0;
int top = n - 1;
int mid, cmp;
while (bot <= top)
```

```
{
mid = (bot + top) / 2;
if (table[mid] = = item)
return mid;
        else if (cmp(table[mid], item) < 0)
        top = mid - 1;
        else
        bot = mid + 1;
}
        else
        return -1;
}
```

6. Consider a student performance measurement system in which an instructor evaluates the students on the basis of mid-semester examinations, final examinations, presentation, attendance, lab examinations and student cognitive skills.

   (a) Write four functional requirements along with their inputs, outputs and constraints from the above system. [4]

   (b) Draw the context level diagram and Level-1 DFD. [2]

   (c) Write the data dictionary in a tabular form. [1]

   (d) Draw structure chart from Level-1 DFD. [1]

7. (a) You are appointed as a software project manager and your first assignment was to study an existing semi automated system for student management life cycle. The system was facing lots of problems. You are assigned to analyze and use the software reverse engineering process to make the system update, solving all existing problems. [Use suitable diagrams and assume facts suitable to solve the problem]. [4]

(b) Debugging approaches are very useful for maintaining the quality of software. Justify by explaining all the debugging approaches for software programmers. [4]

8. Write short notes on *any TWO* of the following: [4 × 2]

(a) RAD model

(b) Software Configuration Management

(c) Activity networks

(d) UML diagram

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