Month and year: Nov/Dec 2024
Programme: B.Tech
Subject: Software Engineering
Maximum Marks: 50
No. of pages: 2

Semester: 3th
Course code: ITPC- 207
Time allowed: 03 Hours

Note1: Attempt five questions. Question no-1 is compulsory.
Note2: Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any. The Candidates, before starting to write the solutions, should please check the question Paper for any discrepancy, and also ensure that have been delivered the question paper of right course no. and right subject title.

Q-1.	a) Define software engineering, reverse engineering and re-engineering. b) Briefly state Error, Mistake, Bug, Fault and Failure in software testing? c) What is stub and driver?	3, 5, 2
Q-2.	Consider a program for the determination of the nature of roots of a quadratic equation. Its input is a triple of positive integers (say a, b, c) and values may be from interval [0, 100]. The program output may have one of the following words: *Not a quadratic equation*; *Real roots*; *Imaginary roots*; *Equal roots*. Design the Boundary value test cases and Robust test cases for this program.	10
Q-3.	a) What is Software Project Planning? What are the various key measures needs to be considered in order to conduct a successful software project? b) A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project.	5*2
Q-4.	What are the characteristics of a good software requirements specification (SRS) document? What are their advantages w.r.t the developer and the target user? Discuss.	10
Q-5.	a) Are the terms software development life cycle (SDLC) and software development process synonyms? Explain your answer. What is the difference between a methodology and a process? b) Explain the iterative waterfall model. What are the advantages and disadvantages of this model?	5*2
Q.6.	Explain Line of Code (LOC). Briefly state, how the LOC affects the software project? Consider the sorting program given below in **Fig. 1**. List out the operators and operands and also calculate the various software science metrics such as Program vocabulary(η), Program length(N), Program volume(V), Effort(E), Language level(λ) etc.	10

1

```
1   int, sort (int x[ ], int n)
2   {
3   int i, j, save, im1;
4   /*This function sorts array x in ascending order */
5   if (n < 2) return 1;
6   for (i = 2; i <= n; i++)
7   {
8   im1 = i - 1;
9   for (j = 1; j <= im; j++)
10  if (x[i] < x[j])
11  {
12  Save = x[i];
13  x[i] = x[j];
14  x[j] = save;
15  };
16  }
17  return 0;
18  }.
```

Fig. 1 A function for sorting an array in ascending order.