

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

B.Tech-IV Semester (IT)

COURSE CODE (CREDITS): 19B11CI411 (3)

MAX. MARKS: 35

COURSE NAME: Software Engineering Practices

COURSE INSTRUCTORS: Dr. Pardeep Kumar

MAX. TIME: 2 Hours

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. Explain process model 1 and process model 2 for software maintenance with suitable diagram. Which is to be used when and why in software industry? Write down equation of approximation estimation cost for maintenance of a software product. [CO-6] [5+2+3]

Q2. A program determines the previous date in the calendar. Its input is entered in the form of dd-mm-yyyy with the following range: mm belongs to [1,12], dd belongs to [1,31] and yyyy belongs to [1900,2025]. Its output would be the previous date or an error message. Design test case table using equivalence class partitioning. [CO-5] [5]

Q3. Consider the program given as under:

```
main() { int work; double payment=0; scanf("%d", &work); if (work>0) payment=40;
if (work>20) { if (work<=30) payment= payment + (work-25)*0.5; else
payment=payment + 50 + (work-30)*0.1; if (payment >=3000) payment = payment*0.9;
}}} printf("final payment=%d", payment); }
```

Draw the control flow graph, calculate the cyclomatic complexity using all the methods, all independent paths and make the test case table for the given program

[CO-5] [2+3+2+3]

Q4. Prove that Halstead software science length estimation formula  $N = \eta_1 \log_2 \eta_1 + \eta_2 \log_2 \eta_2$  where N is the length of the software to be developed and  $\eta_1$  and  $\eta_2$  be the number of unique operators and operands to be used in the software project. [CO-4] [5]

Q5. Write a program to compare two numbers entered by the user. Make a test case table using statement coverage. [CO-6] [5]