

**Fifth Semester B. E. (Computer Science and Engineering)
Examination**

SOFTWARE ENGINEERING

Time : 3 Hours]

[Max. Marks : 60

Instructions to Candidates :—

- (1) All questions carry marks as indicated against them.
- (2) Due credit will be given to neatness and adequate dimensions.
- (3) Assume suitable data and illustrate answers with neat sketches wherever necessary.

1. (a) Describe the scenarios in which the prototyping model can be difficult to use. 3(CO 1)
- (b) Can you justify how most software continues to be custom–built, although the industry is moving towards component based construction ? 3(CO 1)
- (c) Discuss the Scrum approach of agile methodology. 4(CO 1)

OR

- (d) Why is software engineering called as a layered technology ? 4(CO 1)
2. (a) Enlist and explain the set of analysis modeling principles. 6(CO 1 , 2)
- (b) Why is elicitation of requirements a difficult process ? Elaborate. 4(CO 1 , 2)
3. (a) Describe Class–based modeling in the light of identifying the prospective classes for software under construction. 6(CO 2)
- (b) Explain the significance of modularity as a design concept with respect to software cost. Also elaborate on the consequence of extensively decomposing a problem with relation to its impact on solving the problem. 4(CO 2)

4. (a) Consider the pseudo-code given below :—

```
public double calculate (int amount)
{
    double tax = amount * .0725 ;
    if (nextday.equals ( "yes" ) )
        rushCharge = 14.50 ;
    if (amount >= 1000)
        shipcharge = amount * , 0.6 + rushCharge ;
    else if (amount >= 200)
        shipcharge = amount * , 0.8 + rushCharge ;
    else if (amount >= 100)
        shipcharge = 13.25 + rushCharge ;
    else if (amount >= 50)
        shipcharge = 9.95 + rushCharge ;
    else if (amount >= 25)
        shipcharge = 7.25 + rushCharge ;
    else
        shipcharge = 5.25 + rushCharge ;
    total = amount + tax + shipcharge ;
    return total ;
} // end calculate

double rushCharge = 0 ;
```

Draw a flow-graph representation for the above pseudo-code ; compute its cyclomatic complexity values using all available information. Indicate the regions and predicate nodes on the flow-graph clearly. Enlist the independent paths for the code. 4(CO 3)

- (b) Justify the following statement : "Smoke testing helps to uncover '**show-stopper**' errors in a program". 2(CO 3)
- (c) Illustrate and justify how the test cases created using boundary value analysis method are effective for evaluating errors at the boundaries. 4(CO 3)

OR

- (d) Explain the various types of system testing in detail. 4(CO 3)
5. (a) Compute the function point value for a project with the following information domain characteristics. :—
Number of user inputs : 28
Number of user outputs : 50
Number of user enquiries : 42
Number of files : 07
Number of external interface : 03
The overall project is relatively complex. Assume that all complexity adjustment values are moderate. Assume that 14 algorithms have been counted. 4(CO 4)
- (b) Justify the following statement in detail : "Defect Removal Efficiency is the measure of quality assurance and control activities". 3(CO 4)
- (c) Explain the use of Halstead's metrics to compute – program length, program volume and volume ratio. 3(CO 4)

OR

- (d) Recall the quality attributes for software as defined under the ISO 9126 standard. 3(CO 4)
6. (a) Explain with schematic the steps in reverse engineering. 6(CO 4)
- (b) Describe how a Formal Technical Review meeting is conducted. 4(CO 4)

OR

- (c) Elaborate the procedure for Version Control in Software Configuration Management (SCM) process. 4(CO 4)