B. E. Sixth Semester (Computer Technology) / SoE–2014–15 Examination

Course Code : CT 1345 / CT 401/CT 713 **Course Name : Software Engineering**

Time : 3 Hours] [Max. Marks : 60

Instructions to Candidates :—

(1) All questions are compulsory.
(2) All questions carry marks as indicated.
(3) Due credit will be given to neatness and adequate dimensions.
(4) Illustrate your answers wherever necessary with the help of neat sketches.

1. Solve any **One** :

(a) Why the spiral model is called as realistic approach to the development of large-scale systems and software ? Discuss Six task region of spiral model using diagram.

(b) Discuss the following with respect to process of Requirement Engineering :

(i) Elicitation

(ii) Validation

(iii) Negotiation

(iv) Requirement Management. 8

2. Solve any **One** :- 8

(a) Draw and explain the Activity model for Insulin pump safety-critical system.

(b) Disuss the types of coupling using suitable example. 7

3. Solve any **One** :-

(a) Explain Data flow testing .For the given program calculate cyclomatic complexity and independent test paths using basis path testing. (3 + 5)

(1) intialize passes to zero

(2) initialize failures to zero

(3) initialize student to one

(4) while student counter is less than or equal to ten

(5) input the next exam result

(6) if the student passed

(7) add one to passes

(8) else

(9) add one to failures

(10) add one to student counter

(11) endif

(12) endwhile

(13) print the number of passes

(14) print the number of failures

(15) if eight or more students passed

(16) print 'raise tuition'

(17) endif.

(b) How the external behavior of s/w system is tested ? Explain Suppose Nagpur City is installing the AutoCop Traffic Law Enforcement System. AucoCop is a sensor-camera combo installed near a traffic light. When the sensor detects a speeding (faster than 40 miles/hour) car passing by or a car running through the red light, Auto Cop will active the camera and take a picture of the plate ? Use the equivalence partitioning and boundary value analysis mathods to derive the test cases to test the camera activation logic. 4+4=8

4. Solve any **One** :

(a) What are primary objective of SCM ? Disscuss the process of change control. 7

(b) List and Explain the Features of SCM Repository. How SCI are stored in Repository ? 7

5. Solve any **Two** :

(a) Consider a software package to be developed for computer aided design (CAD) application for mechanical componets. The major software functions are as follows :-

(1) User interface and control facilities (UICF).

(2) Two-dimensional geometric analysis (2DGA)

(3) Three-dimensional geometric analysis (3DGA)

(4) Database management (DBM)

(5) Computer graphics display facilities (CGDF)

(6) Peripheral control function (PCF)

(7) Design analysis modules (DAM)

The project planner estimates input, output, inquiries, files and external interfaces for the CAD software. The optimistic values for the information domains are 20, 12, 14, 4, 2 respectively. The most likely values for the information domains are 24, 14, 21, 4, 2 respectively. The pessimistic value for the information domains are 30, 21, 26, 5, 4 respectively. A review of historical data indicates that the organizational average productivity for systems of this type is 6.5 FP/ pm and labor rate of $ 8000 per month. Assume complexity adjustment values are average.
Find :

(i) Estimated FP

(ii) Estimated project cost.

(ii) Estimated effort. 7.5

(b) Discuss function-oriented metrics For the software pakage ERP application the information domain values are No. of input, No. of output, No. of inquiries, No. of files and No. of external interfaces are 20, 16, 19, 6 and 2 respectively. If we counted 14 algorithms as a basis and complexity adjustment values are 4, 5, 4, 10, 10, 7. Calculate the value of unadjusted and adjusted function point. 7.5

(c) What is Risk ? What do mean by reacive and proactive risk ? Explain steps of risk Estimation. 7.5

6. Solve any **Two** :

(a) Discuss the modal of reengineering paradigm. 7.5

(b) Explain lifecycle of subversion using approprate commands. 7.5

(c) What is forward and reverse engineering ? Explain reverse engineering process. 7.5