MCA 2rd YEAR 2ND SEMESTER EXAMINATION, 2018(OLD)

SOFTWARE ENGINEERING

Time : Three hours | Full Marks : 100

*Answer Question No.***1** *and any* **FOUR** *from the rest*

1. (a) Draw the state transition table, using Markov Availability model (discrete state and continuous time), of a software system.
   (b) Depth-first integration vs. Breadth-first integration.
   (c) What is the function of 'Cardinality' in Entity Relationship Diagram?
   (d) What is Project control list? Indicate the activities of Project control list.
   (e) Indicate the role of 'Data Store' in DFD. [4x5]

2. (a) What is the importance of Life Cycle in System Development ?
   (b) Briefly describe the functions of Data Collection and Analysis phase.
   (c) Indicate the outputs of Waterfall model. [8+8+4]

3. (a) How the internal activity of a module is maintained?
   (b) Why Coupling is important in modular programming?
   (c) Compare Coupling and Cohesion with example. [6+4+10]

4. (a) What is good SRS? Describe the characteristics of a good SRS.
   (b) Why the term Requirement Engineering? What are the types of Requirements? Give one example for each type.
   (c) How the requirements are categories? Give example for each category. [5+7+8]

5. (a) Estimate MTTF, when constant hazard.
   (b) Establish the relationship when time tends to infinity with a single component repairable system.
   Steady State Availability, Ass(t) = MTTF/(MTTF+MTTR) [8+12]

6. (a) Define "Cyclomatic Complexity". Find out the cyclomatic complexity of the of the following program logic (in the form of Structured English): by flowgraph method and graph matrix method. Also find out the basic path set.

```
Read N
Max = 0
I = 1
While I <= N
Read X(I)
If X(I) > Max
 Then Max =X(I)
 I = I+1
Print Max
```

(b) Find out the link weight of the above flowgraph. [2+10+3+5]

7. (a) Define software complexity ?
(b) Calculate (i) expected program length, (ii) program volume, (iii) critical program volume of the program segment of question number 6(a) : [8+12]

8. Write short notes on (any four) : [4x5]
(a) Black Box Testing
(b) Regression Testing
(c) Software failure modes
(d) Complete Repair Time of a software
(e) Effort Adjustment Factor
(f) COCOMO Model