53 (IT 605) SWEN

2019

SOFTWARE ENGINEERING

Paper : IT 605

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* With a clear diagram, discuss briefly the different phases of Classical Waterfall Model for software development. 10

   (b) Why Classical Waterfall Model is not a choice of the modern software developers ? 5

   (c) Discuss any other models that can overcome the problem of Classical Waterfall Model. 5

2. *(a)* What is SRS? Lists *six* desirable characteristics of a good Software Requirement Specification (SRS) documents. 1+3=4

(b) Create a suitable SRS for the library of your college. 10

(c) Suppose that a project was estimated to be 400 KLOC. Calculate the effort and development time for each of the three modes of basic COCOMO. 6

3. *(a)* Write the differences between CPM and PERT project management. 4

(b) Consider the following table summarizing the details of a project.

		DURATION (weeks)		
Activity	**Predecessor(s)**	**Optimistic time**	**Most likely time**	**Pessimistic time**
A	–	5	6	7
B	–	1	3	5
C	–	1	4	7
D	*A*	1	2	3
E	*B*	1	2	9
F	*C*	1	5	9
G	*C*	2	2	8
H	*EF*	4	4	10
I	*D*	2	5	8
J	*H, G*	2	2	8

(i) Construct the Project Network.

(ii) Find the expected duration and variance of each activity.

(iii) Find the critical path and expected project completion time. 4+8+4=16

4. *(a)* Why software maintenance is considered as the costliest and longest phase in software development life cycle? 4

(b) Explain Software RE Engineering and Reverse Engineering. 4

(c) Suggest why the architectural design of a system should precede the development of a formal specification. 4

(d) Explain the steps in Requirement Engineering. 4

(e) Define Software Risk and Software Quality Assurance. Write the differences between Proactive and Reactive Risk strategies. 4

5. *(a)* Briefly explain Cohesion and Coupling with suitable diagram. 5+5=10

(b) Can a module be both highly cohesive and highly coupled? Would that be desirable? Justify your answer. 4

(c) Explain the following context of UML:

(i) Sequence Diagram

(ii) Class and Objects. 6

6. (a) Describe different types of views and diagrams supported in UML. 4+8=12

(b) Describe *three* golden rules of User Interface Design. 3

(c) Consider the following: 3+2=5

```
If   A=10 THEN
     If (B>C) THEN
          A=B
     ELSE
          A=C ;
     END IF
END IF
PRINT A
PRINT B
PRINT C
```

Create a CFG and also compute McCabe's Cyclomatic Complexity for the above code.

7. Write short notes on the following: ***(any four)*** 4×5=20

(a) White box testing and Black box testing

(b) Alpha testing (α) and Beta testing (β)

(c) Top down and Bottom-up Integration testing

(d) Functional and Non-functional requirements

(e) GUI and Test-based interface.
