

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/ Backlog), April 2018

B. Tech. in Computer Science & Engg.(CSE), (CSE-M.Tech)

Semester VI

Roll No.....

CSE 604: Software Engineering

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
 2. Assume suitable data wherever required and mention it clearly.
 3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
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Q.1A Attempt all questions (10 questions @ 1 mark)

10

- i. Who writes the software requirement specifications document (SRS)?
 - (a) System developer
 - (b) System Tester
 - (c) System Analyst
 - (d) None of these above
- ii. ----- model is also known as linear sequential model.
 - (a) Prototype model
 - (b) Waterfall model
 - (c) Spiral model
 - (d) None of these above
- iii. Agile Software Development is based on
 - (a) Incremental Development
 - (b) Iterative Development
 - (c) Both Incremental and Iterative Development
 - (d) None of these above
- iv. What is a DFD?
 - (a) The modern version of flowchart
 - (b) Mainly used at systems specification stage
 - (c) The primary output of the system design phase
 - (d) All of the above
- v. In UML ----- is a collection of things tied together through relationships.
 - (a) things
 - (b) relationships
 - (c) diagrams
 - (d) none of these
- vi. Which of the following is not a component of object oriented software engg.
 - (a) Process
 - (b) Method
 - (c) Architecture
 - (d) None of these

- vii. Coupling is a measure of
 - (a) Relative functional strength
 - (b) Interdependence among module
 - (c) Both of the above
 - (d) None of the above
- viii. _____ states that, where appropriate, adequate statistical techniques are identified and used to verify the acceptability of process capability and product characteristics.
 - (a) ISO 9001
 - (b) ISO 9000-4
 - (c) CMM
 - (d) All of the mentioned
- ix. What is done during maintenance phase?
 - (a) System requirements are established
 - (b) Programs are tested
 - (c) System analysis is carried out
 - (d) None of the above
- x. To test a function, what has to write a programmer, which calls the function to be tested and passes it test data.....

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Give the importance of software engineering.	
ii.	What is the difference between a Bug and a Defect?	
iii.	How is plan driven development different from agile development?	
iv.	List the process maturity levels in SEI' s CMM.	
Q.3A	Explain waterfall model in detail. What are the problems that are sometimes encountered when the waterfall model is applied?	05
Q.3B	What is feasibility study? What are the contents we should contain in the feasibility report?	05
Q.4A	What is the difference between SRS document and design document? Explain a typical SRS structure and its parts.	05
Q.4B	What are the characteristics of a good design? Describe different types of coupling and cohesion.	05
Q.5A	Do we design software when we "write" a program? What makes software design different from coding?	05
Q.5B	Consider a project with the following functional units: No of user inputs=30 No of user outputs=42 No of user enquiries=08 No of user files=07 No of external interfaces=04 Assume all complexity adjustment values are moderate, and weighting factors are average.	05

Compute Function Point (FP) for the project.

[Note: **EI**:3(low), 4(Average), 6(High), **EO**:4(low), 5(Average), 7(High), **EQ**:3(low), 4(Average), 6(High), **ILF**:7(low), 10(Average), 15(High), **EIF**:5(low), 7(Average), 10(High)].

Q.6A Discuss the following testing mechanisms. 05
a. Unit testing
b. Integration testing

Q.6B What is SQA? Discuss about the activities of SQA. 05

OR

Q.6B Define Structure chart. Draw a structure chart for "Update the record" module. 05

Q.7A Consider a simple program to classify a triangle. Its inputs is a triple of positive integers (say x, y, z) and the data type for input parameters ensures that these will be integers greater than 0 and less than or equal to 100. The program output may be one of the following words: 05
[Scalene; Isosceles; Equilateral; Not a triangle]
Design the boundary value test cases.

Q.7B Why the software needs maintenance? What are the types of software maintenance? Justify the statement "Software maintenance is costlier". 05

OR

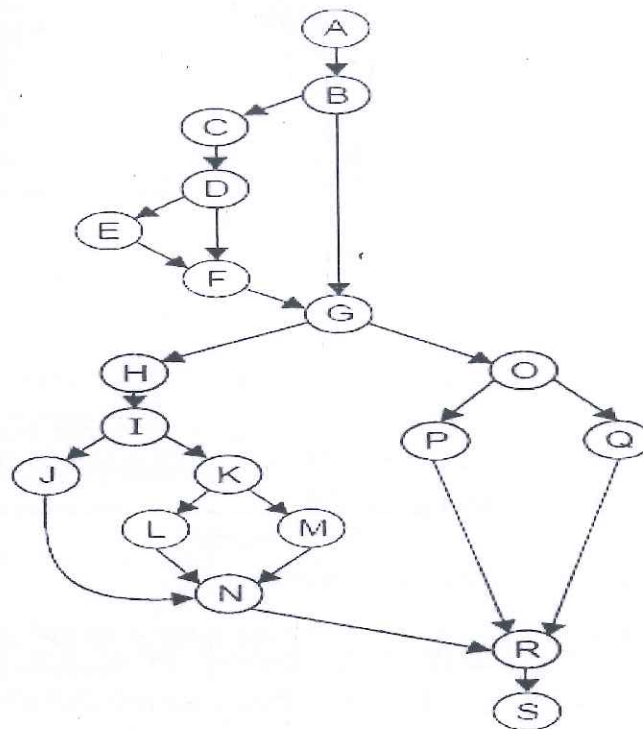
Q.7B Define software configuration management (SCM). List the process activities of SCM. 05

Q.8A List several software process paradigms. Explain how both waterfall model and prototyping model can be accommodated in the spiral process model. 10

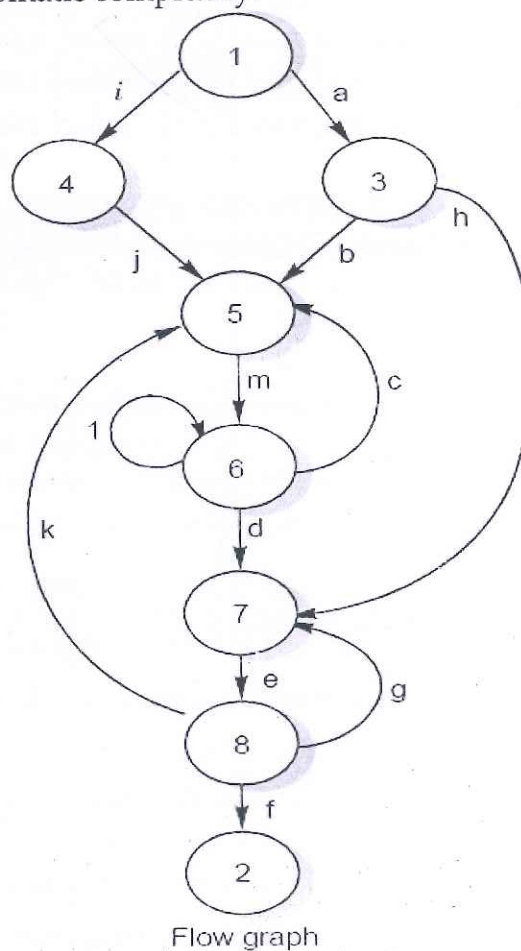
Q.9A (i) Draw the Control Flow Graph (CFG) for the following program: 10

```
{  
int sum, i;  
sum=0;  
i=1;  
while(i<=x)  
{  
sum=sum+i;  
i=i+1;  
}  
printf("%d", sum);  
}
```

(ii) Consider following DD path graph, calculate the Cyclomatic complexity by all methods.



(iii) Consider following flow graph, Draw the graph and connection matrices and find out the Cyclomatic complexity.



9B Explain the need for software measures and describe various metrics.

10

A project size of 300 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project.

(Note: **Organic:** $a_b = 2.4$, $b_b = 1.05$, $c_b = 2.5$, $d_b = .38$; **Semidetached:** $a_b = 3.0$, $b_b = 1.12$, $c_b = 2.5$, $d_b = .35$; **Embedded:** $a_b = 3.6$, $b_b = 1.20$, $c_b = 2.5$, $d_b = .32$)

OR

Q.9B Define Functional Oriented Vs Object Oriented Design approach. Consider the problem of "Hotel management system" and design the following:

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- Problem Statement
- Use Case diagram
- Sequence diagram