

Time: 3 Hours

DECEMBER 2014

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. Requirements can be refined using:
- (A) The waterfall model (B) Prototyping model
(C) The evolutionary model (D) The spiral model
- b. A fault simulation testing technique is:
- (A) Mutation testing (B) Stress testing
(C) Black box testing (D) White box testing
- c. Modules X and Y operate on the same input and output data, then the cohesion is:
- (A) Sequential (B) Communicational
(C) Procedural (D) Logical
- d. The model in which the requirements are implemented by category is:
- (A) Evolutionary Developments Model
(B) Waterfall Model
(C) Prototyping
(D) Iterative Enhancement Model
- e. The desired level of coupling is:
- (A) No coupling (B) Control coupling
(C) Common coupling (D) Data coupling
- f. What is / are the correct statement(s) with respect to software quality?
- (A) Static testing of single module
(B) Dynamic testing of single module
(C) Static testing of single and multiple modules
(D) Dynamic testing of single and multiple modules

- g. If every requirement can be checked by a cost-effective process, then the SRS is:
- (A) Verifiable (B) Traceable
(C) Modifiable (D) Complete
- h. All activities lying on critical path have slack time equal to
- (A) 0 (B) 1
(C) 2 (D) None of these
- i. In function point analysis, number of general system characteristics used to rate the system are
- (A) 10 (B) 14
(C) 20 (D) 12
- j. If P is risk probability, L is loss, then Risk Exposure (RE) is computed as
- (A) $RE = P/L$ (B) $RE = P + L$
(C) $RE = P*L$ (D) $RE = 2*P*L$

**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

- Q.2** a. Elaborate the technical and interpersonal skills required for a system analyst. (4)
- b. Give example of the type of system models that you might create during the analysis process. (6)
- c. Describe Key process areas of Capability Maturity Model (CMM). (6)
- Q.3** a. What do you understand by requirement elicitation? Discuss any two techniques in detail. (8)
- b. Consider the program given below (8)
- ```
void main()
{
int i,j,k;
readln (i,j,k);
if ((i < j) || (i > k))
{
writeln("then part");
if (j < k)
writeln (" j less then k");
else writeln (" j not less then k");
}
else writeln("else Part");
}

```
- (i) Draw the flow graph  
(ii) Determine the cyclomatic complexity  
(iii) Arrive at all the independent paths
- Q.4** a. List the benefits of prototyping. Differentiate between the objectives of evolutionary and throw-away prototyping. (6)

- b. Compute function point value for a project with the following domain characteristics:  
No. of I/P = 30  
No. of O/P = 62  
No. of user Inquiries = 24  
No. of files = 8  
No. of external interfaces = 2  
Assume that all the complexity adjustment values are average. Assume that 14 algorithms have been counted. (6)
- c. Explain the general principles of user interface design. (4)
- Q.5** a. What is meant by design patterns? What are the advantages of using design patterns? (4)
- b. Discuss the important characteristics of distributed approach to system development? (6)
- c. What is difference between module coupling and module cohesion? List different types of coupling and cohesion. (6)
- Q.6** a. Discuss the benefits and problems of software reuse. (6)
- b. Explain : (5×2)  
(i) Reverse Engineering  
(ii) Re-Engineering
- Q.7** a. What is ripple effect? How does it affect the stability of a program? (4)
- b. Explain fault-tolerant architecture with suitable diagram. (6)
- c. Write a brief note on the following estimation techniques: (3×2)  
(i) Algorithmic cost modelling  
(ii) Expert judgement  
(iii) Estimation by analogy
- Q.8** a. Explain various types of debugging techniques used in Software testing. (6)
- b. What are the advantages of using testing tools? Explain in detail different type of testing tools. (6)
- c. Explain some of the limitations of testing. (4)
- Q.9** a. Write short notes on: (4×2)  
(i) Configuration Management  
(ii) Decision Table
- b. With the help of a figure, explain the key stages of software measurement process which is a part of a quality control process. (8)