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[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4679

E

Unique Paper Code : 32341402

Name of the Paper : Software Engineering (DSC)

Name of the Course : B.Sc. (H) Computer Science

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper
2. The paper has **Two** Sections
3. All questions in 'Section A' are compulsory.
4. Attempt Any **Four** questions from 'Section B'.
5. Parts of a question must be answered together.

SECTION A

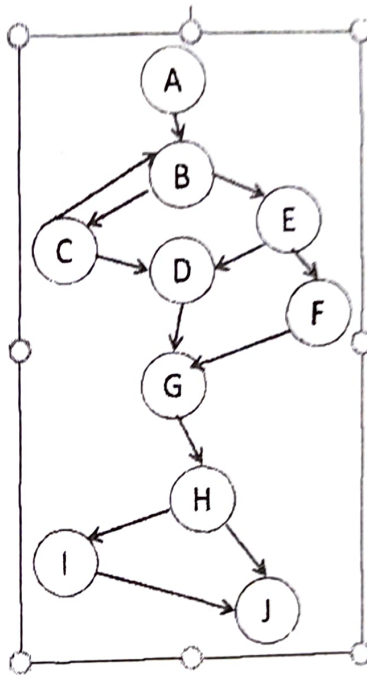
1. (i) What are umbrella activities? Are they applied evenly across the software development life cycle? Justify your answer. (4)

P.T.O.

- (ii) What do you understand by Time-Line Chart?
How is it used in project scheduling? (4)
- (iii) What are Incremental Process Models? Explain the use of incremental process model with the help of an example. (4)
- (iv) Explain any three agility principles. (3)
- (v) What is the significance of functional and non-functional requirements? Explain with the help of suitable examples. (4)
- (vi) "A software engineer must design the modules with the goal of high cohesion and low coupling". Justify this statement. (4)
- (vii) Illustrate the importance of testing. Explain why software fails after it has passed the acceptance testing? (4)
- (viii) How do you assess Impact of the Risk? Give the formula for determining the overall Risk Exposure (RE). (4)
- (ix) Define the five capability levels of CMMI. (4)

SECTION B

2. What is the purpose of computing cyclomatic complexity? Compute cyclomatic complexity using 3 different methods. List all the independent paths in the given graph. (3+3+4)



3. (a) Explain the spiral model for software development with the help of diagram. How does "project risk" factor affect this model. (7)
- (b) Give three basic assumptions that an agile process is expected to handle. (3)

P.T.O.

4. Assume that you are asked to build a software system that : (3+4+3)

- (i) allows candidates to submit their online admission form to seek admission in a listed course and college
- (ii) automatically verify the eligibility of a candidate
- (iii) provides an environment to teachers and administrators to verify the records
- (iv) allows an eligible candidate to submit fee online
- (v) generates acknowledgement slip for candidates and
- (vi) generates course-wise students' report for college authority.

Draw the following :

1. Context level diagram (0 Level DFD (Data Flow Diagram))
2. Level 1 DFD
3. Data Dictionary for the above system

5. (a) Compute the Function Point value for a project with the following information domain characteristics : (5)

Assume the measurement parameters equally divided among low, average and high complexity. Further, assume that the complexity adjustment value is 1.5.

Measurement Parameters	count	Weighing factors		
		low	average	high
Number of user inputs	12	3	4	6
Number of user outputs	30	4	5	7
Number of user inquiries	6	3	4	6
Number of files	9	7	10	15
Number of external interfaces	3	5	7	10

- (b) At the end of a project, it has been determined that 20 errors were found during the analysis phase and 10 errors were found during the design phase that were traceable to errors that were not discovered in the analysis phase. What is the DRE for the analysis phase? (5)

6. (a) Describe any five activities of software quality assurance that focuses on the management of the software quality. (5)

P.T.O.

- (b) What are the characteristics of Risk? Explain different type of risks considered during the software project. (5)
7. Differentiate between the following : (10)
- (i) Coupling and Cohesion
 - (ii) Verification and Validation
 - (iii) Reactive Risk Strategy and Proactive Risk Strategy
 - (iv) Milestone and Deliverable
 - (v) Alpha Testing and Beta Testing
8. (a) What is software requirement specification (SRS)? How is it used to bridge the communication gap between the developer and the customer? (5)
- (b) Consider a program for computing the function $f(a,b)$ where the input variables a and b are in the range
- $$2 \leq a \leq 5$$
- $$1 \leq b \leq 10$$
- Design the boundary value test cases for the program. (5)