

Hall Ticket Number:

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Code No. : 14666 N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**

Accredited by NAAC with A++ Grade

**B.E. (I.T.) IV-Semester Main & Backlog Examinations, July/August-2023****Software Engineering**

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

**Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Differentiate between Iterative and Evolutionary Process flows.	2	2	1	1
2.	Give two examples of software projects that would be amenable to the incremental model.	2	1	1	1
3.	List the basic guidelines for Collaborative Requirements Gathering.	2	1	2	1
4.	Differentiate between Scenario based models and Behavioral models.	2	2	2	1
5.	Compare and contrast Architecture Description and Architecture Decision.	2	2	3	1
6.	List three golden rules for User Interface Design.	2	1	3	1
7.	Differentiate between Error, Fault and Failure.	2	2	4	1
8.	Mention the scenarios where Alpha testing along with Beta testing is necessary and where it is not.	2	1	4	1
9.	Illustrate the relationship between Measures, metrics and indicators.	2	2	5	1
10.	List any two metrics for maintenance.	2	1	5	1
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Justify how both the waterfall model and prototyping model of software process can be accommodated in spiral model.	4	3	1	2
b)	Giving reasons for your answer based on the type of system being developed, suggest the most appropriate generic software process model that might be used as a basis for managing the development of the following systems: (i) A system to control anti-lock braking in a car (ii) A virtual reality system to support software maintenance (iii) A university accounting system that replaces an existing system (iv) An interactive system that allows railway passengers to find train times from terminals installed in stations.	4	4	1	2
12. a)	What is Software Requirements Specification (SRS)? Describe the Requirements Engineering Process.	4	1	2	1
b)	Develop a generic use case model and list the scenarios for a Library Information System.	4	3	2	2
13. a)	What is Software architecture? Illustrate the data-centered architecture and explain its advantages and disadvantages	5	2	3	1
b)	Explain the process of refining Architecture into Components	3	1	3	1

Contd... 2



14. a)	A program reads three integer values. These three values are interpreted as representing the lengths of the sides of a triangle. The program prints a message that states whether the triangle is scalene, isosceles, or equilateral. Develop set of test cases to extensively test the above program.	3	3	4	2																		
b)	<table border="1" data-bbox="231 324 1117 638"> <tr> <td data-bbox="239 336 925 504">An Insurance company has a base premium of Rs. 1000/= for all ages. Based on age group, an additional monthly premium has to be paid as per as listed in the table below to find the total premium (base+additonal premium)</td> <td data-bbox="933 336 1109 392"><b>Additional Premium</b></td> </tr> <tr> <td data-bbox="239 504 925 537"><b>Age group</b></td> <td></td> </tr> <tr> <td data-bbox="239 537 925 571">Under 35</td> <td data-bbox="933 537 1109 571">Rs. 2000</td> </tr> <tr> <td data-bbox="239 571 925 604">35-59</td> <td data-bbox="933 571 1109 604">Rs. 3000</td> </tr> <tr> <td data-bbox="239 604 925 638">60+</td> <td data-bbox="933 604 1109 638">Rs. 5000</td> </tr> </table> <p data-bbox="207 638 1149 750">Draw a flowchart and flow graph to compute the total premium. Compute cyclomatic complexity considering the number of vertices and edges and list the independent paths.</p>	An Insurance company has a base premium of Rs. 1000/= for all ages. Based on age group, an additional monthly premium has to be paid as per as listed in the table below to find the total premium (base+additonal premium)	<b>Additional Premium</b>	<b>Age group</b>		Under 35	Rs. 2000	35-59	Rs. 3000	60+	Rs. 5000	5	3	4	2								
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15. a)	Compute the function point value for a project with the following information domain characteristics.	4	3	5	2																		
	<table border="1" data-bbox="215 840 1109 1086"> <thead> <tr> <th data-bbox="215 840 606 884">Information Domain value</th> <th data-bbox="614 840 718 884">Count</th> <th data-bbox="726 840 1109 884">Weighting factor (Average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="215 884 606 929">Number of external inputs</td> <td data-bbox="614 884 718 929">32</td> <td data-bbox="726 884 1109 929">4</td> </tr> <tr> <td data-bbox="215 929 606 974">Number of external outputs</td> <td data-bbox="614 929 718 974">60</td> <td data-bbox="726 929 1109 974">5</td> </tr> <tr> <td data-bbox="215 974 606 1019">Number of external queries</td> <td data-bbox="614 974 718 1019">24</td> <td data-bbox="726 974 1109 1019">4</td> </tr> <tr> <td data-bbox="215 1019 606 1064">Number of Logical files</td> <td data-bbox="614 1019 718 1064">8</td> <td data-bbox="726 1019 1109 1064">10</td> </tr> <tr> <td data-bbox="215 1064 606 1086">Number of external interfaces</td> <td data-bbox="614 1064 718 1086">2</td> <td data-bbox="726 1064 1109 1086">7</td> </tr> </tbody> </table> <p data-bbox="207 1108 1149 1153">Assume that all complexity adjustments values are average. And <math>\sum Fi</math> is 46</p>	Information Domain value	Count	Weighting factor (Average)	Number of external inputs	32	4	Number of external outputs	60	5	Number of external queries	24	4	Number of Logical files	8	10	Number of external interfaces	2	7				
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b)	You are the project manager for a major software company. You have been asked to lead a team that's developing "next generation" word processing software. Create a risk table for the project. Also describe the difference between risk components and risk drivers.	4	3	5	2																		
16. a)	What is the need of Personal Software Process (PSP)? Explain the activities of PSP Model.	4	2	1	1																		
b)	<p data-bbox="207 1388 1149 1489">The Department of Public works developed a Pothole Tracking and Repair system. Users login to the system and report the location (that includes state, district, area, street number and name) of the potholes along with the photo.</p> <p data-bbox="207 1489 1149 1534">The Public works system tracks the status of the potholes and repairs them.</p> <p data-bbox="207 1534 1149 1601">Draw a UML Use case diagram for Pothole Tracking and Repair system. Also develop the class diagram for the same.</p>	4	3	2	2																		
17.	Answer any <i>two</i> of the following:																						
a)	Describe the Basic Design Principles for Component designing.	4	2	3	1																		
b)	What is Loop Testing? Differentiate different classes of loops	4	2	4	1																		
c)	Describe attributes of effective software metrics	4	2	5	1																		

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	22%
ii)	Blooms Taxonomy Level - 2	39%
iii)	Blooms Taxonomy Level - 3 & 4	39%

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