



KIIT Deemed to be University
Online End Semester Examination(Autumn Semester-2021)

Subject Name & Code: Software Engineering (CS-3003) **Applicable to Courses:Regular**

Full Marks=50

Time:2 Hours

SECTION-A(Answer All Questions. Each question carries 2 Marks)

Time:30 Minutes

(7×2=14 Marks)

<u>Question No</u>	<u>Question Type (MCQ/SAT)</u>	<u>Question</u>	<u>CO Mapping</u>	<u>Answer Key (For MCQ Questions only)</u>
<u>Q.No:1</u>	<u>MCQ</u>	Which is not one of the types of Problems in Requirement? (a)Ambiguity (b) Inconsistency (c)Incompleteness (d) Complexness	CO-2	(d)
	<u>MCQ</u>	The driver for a printer comes under which type of software (a) Organic (b) Semideteched (c)Embedded (d) None	CO-3	(c)
	<u>MCQ</u>	The properties of RAD model matches with which other SDLC model? (a) Waterfall (b) Spiral (c)Prototype (d) Agile	CO-1	(d)
	<u>MCQ</u>	Which is not a part of SRS? (a) Non-Functional Requirement (b) Algorithm (c)Functional Requirement (d)System Constraint	CO-2	(b)
<u>Q.No:2</u>	<u>MCQ</u>	Suppose we want to migrate a software from Ubuntu platform to Windows platform, which type of maintenance is required? (a) Adaptive (b) Corrective (c) Perfactive (d) Preventive	CO-1	(a)
	<u>MCQ</u>	Alpha and Beta testing are the form of which testing? (a) Unit Testing (b) System Testing (c) Integration Testing (d) Acceptance Testing	CO-5	(d)
	<u>MCQ</u>	The tools those are helping in	CO-3	(c)

		different stages of software development are called ____. (a) CARE Tools (b) CAME Tools (c) CASE Tools (d) COCOMO Tools		
	<u>MCQ</u>	The testing which is performed by the development team is known as ____. (a) Unit Testing (b) System Testing (c) Integration Testing (d) Regression Testing	CO-5	(a)
<u>Q.No:3</u>	<u>MCQ</u>	Which of the following is not the responsibility of one project manager? (a) Planning (b) Estimation (c) Coding (d) Control & Monitoring	CO-3	(c)
	<u>MCQ</u>	Risk Reduction Leverage determines the ____. (a) Cost of software (b) Cost of solution that reduces risk (c) whether to adopt risk reduction technique or not (d) None	CO-3	(c)
	<u>MCQ</u>	When one module passes one stack to another module, then which type of coupling is present? (a) Data (b) Stamp (c) Common (d) Content	CO-4	(b)
	<u>MCQ</u>	To develop a safety critical system, which is the preferred SDLC model? (a) Iterative Waterfall (b) Spiral (c) Agile (d) RAD	CO-1	(b)
<u>Q.No:4</u>	<u>MCQ</u>	CMM model in Software Engineering is the technique of ____. (a) Improvement of software process (b) Testing improvement process (c) Improvement of Development process (d) Improvement of deployment process	CO-6	(a)
	<u>MCQ</u>	The type of relation between House class and Room class is ____. (a) Associationship (b) Aggregation (c) Composition (d) Inheritance	CO-4	(b)
	<u>MCQ</u>	Unit testing comes under which type of testing? (a) Black-box (b) White-box (c)	CO-5	
	<u>MCQ</u>	Out of given types of cohesion, which one is having lowest cohesion? (a) Logical (b) Temporal (c) Procedural (d)	CO-4	(a)

		Communicational		
<u>Q.No:5</u>	<u>MCQ</u>	What does the Slack time of an activity represent? (a)Activity Duration (b)Time difference between two activities (c)Permissible delay time (d) Software Development time	CO-3	(c)
	<u>MCQ</u>	Standard number of bubbles/processes may present in one DFD are ____? (a) 3 to 5 (b) 3 to 7 (c)5 to 10 (d) more than 10	CO-4	(b)
	<u>MCQ</u>	Complete testing is _____. (a) Possible (b)Impossible (c) Can't say (d)None	CO-5	(b)
	<u>MCQ</u>	If there are 25persons working for 4 months, then what will be the effort delivered by them? (a)25PM (b) 4 PM (c) 50 PM (d) 100 PM	CO-3	(d)
<u>Q.No:6</u>	<u>MCQ</u>	Bug discovery is a ____ goal of software testing. (a) Short-term (b) Long-term (c) Post-implementation (d) All of the mentioned	CO-5	(a)
	<u>MCQ</u>	If branch coverage has been achieved on a unit under test, which of the following coverage is implicitly implied? (a)Path coverage (b) Multiple condition coverage (c) Statement coverage (d) Data flow coverage	CO-5	(c)
	<u>MCQ</u>	Which of the following statement is correct regarding COCOMO? (a) Basic COCOMO uses 15 cost drivers in order to make the estimation more accurate. (b) Constant parameters in basic and indeterminate COCOMO have no impact on the estimation. (c) Basic and the intermediate COCOMO consider a software product as a single homogeneous entity. (d) Both (a) & (b)	CO-3	(c)
	<u>MCQ</u>	Which statement is correct regarding critical path in project management? (a) CPM can be used to determine the optimal	CO-3	(d)

		<p>estimated duration of a project.</p> <p>(b) A critical task is one with a non-zero slack time.</p> <p>(c) A path from the start node to the finish node containing few critical tasks is called a critical path.</p> <p>(d) A critical task is one with zero slack time.</p>		
<u>Q.No:7</u>	<u>MCQ</u>	<p>Which of the following is not a software configuration management activity?</p> <p>(a) Configuration Object identification</p> <p>(b) Change Control</p> <p>(c) Risk management</p> <p>(d) Release Management</p>	CO-2	(c)
	<u>MCQ</u>	<p>The DFD are drawn to represent the output of ____?</p> <p>(a) Structured Analysis (b) Structured Design (c) Structured Programming (d) Object-oriented Design</p>	CO-4	(a)
	<u>MCQ</u>	<p>In risk management, the technique of allocating risks to third party belongs to which strategy?</p> <p>(a) Avoid the risk (b) Transfer risk (c) Contingency planning (d) None</p>	CO-3	(b)
	<u>MCQ</u>	<p>In a company, if the management and development activities are practiced, then that company belongs to which CMM level?</p> <p>(a) Level 1 (b) Level 2 (c) Level 3 (d) Level 4</p>	CO-4	(c)

SECTION-B(Answer Any Three Questions. Each Question carries 12 Marks)

Time: 1 Hour and 30 Minutes

(3×12=36Marks)

<u>Question No</u>	<u>Question</u>	<u>CO Mapping</u> <u>(Each question should be from the same CO(s))</u>
<u>Q.No:8</u>	(a) Briefly explain the process of developing software using evolutionary model. Under what circumstances is it beneficial to develop an evolutionary model? Give the relative advantages of	CO-1 & CO-3

	<p>this model over prototype model and one disadvantage of using this model.</p> <p>(b)Suggest a suitable life cycle model for a Software Project where underlying technical aspects are not well understood. Explain the proposed model in detail with schematic diagram.</p> <p>(a) Briefly explain the process of developing software using prototype model. Under what circumstances is it beneficial to develop a prototype model? Give the advantages and disadvantages of this model.</p> <p>(b)What do you mean by coupling? Why low coupling is desirable among the modules while developing a software product? Explain the different types of coupling with suitable examples.</p> <p>(a) Briefly explain the process of developing software using incremental waterfall model. Under what circumstances this model is used?</p> <p>(b) Consider a project with the following functional units: 30 simple user forms and 20 average complexity user inputs. 40 screen display. 20 simple inquires and 15 complex inquires. User files are: Customer information, daily transaction details and 4 more. Number of external interfaces=4. Assuming all complexity adjustment factors as average. Calculate the function point for the project.</p>	
<p><u>Q.No:9</u></p>	<p>(a) Considering the online banking system, functional requirements in SRS using IEEE format for “Log-in” “Deposit_Money”,and “Withdraw_Money” functionalities.</p> <p>(b) What do you mean by cohesion? Why high cohesion is desirable among the modules while developing a software product? Explain the different types of cohesion with suitable examples.</p> <p>(a) Explain the metrics for project size estimation.</p> <p>(b)Consider the following program: main() {</p>	<p>CO-2, CO-4, CO-5</p>

	<pre> char chr; 1. printf ("Enter the special character\n"); 2. scanf ("%c", &chr); 3. if (chr != 48) && (chr != 49) && (chr != 50) && (chr != 51) && (chr != 52) && (chr != 53) && (chr != 54) && (chr != 55) && (chr != 56) && (chr != 57) 4. { 5. switch(chr) 6. { 7. Case '*': printf("It is a special character"); 8. break; 9. Case '#': printf("It is a special character"); 10. break; 11. Case '@': printf("It is a special character"); 12. break; 13. Case '!': printf("It is a special character"); 14. break; 15. Case '%': printf("It is a special character"); 16. break; 17. default : printf("You have not entered a special character"); 18. break; 19. } // end of switch 20. } // end of If 21. else 22. printf("You have not entered a character"); 23. } // end of main() (a) Draw the CFG for the program. (b) Calculate the cyclomatic complexity of the program using all the methods. (c) List all independent paths. </pre>	
<p><u>Q.No:10</u></p>	<pre> (a) Describe the software project estimation technique using COCOMO along with all its stages. (b)What are the shortcomings of the Waterfall model? How does an Agile method overcome those shortcomings? </pre>	<p>CO-2, CO-3, CO-5</p>

	<p>the average salary of software engineers to be Rs. 35,000/- per month. Estimate the nominal (i) cost and (ii) time to develop the software product.</p> <p>(a) What is the difference between black box testing and white box testing? Discuss any two test case generation strategies for each category with suitable example.</p> <p>(b) A program takes as input a string (5-20 characters) and a single character and checks whether that single character is present in the string or not. Design test cases for this program using Boundary Value Checking (BVC).</p> <p>(a) What is Equivalence Class partitioning method of testing? Generate the test cases for a program which finds the largest among three numbers A, B, C. Given the range of A [1, 50], B[1, 100], C[1, 25].</p> <p>(b) What do you mean by Statement coverage testing? Design test cases for statement coverage for the given program snippet:</p> <pre> if(n1 >= n2) { if (n1 >= n3) printf("%d is largest", n1); else printf("%d is largest", n3); } else { if(n2 >= n3) printf("%d is largest", n2); else printf("%d is largest", n3); } </pre>	
<p><u>Q.No:11</u></p>	<p>Consider a software called Automobile Spare Parts Shop Automation Software (AAS) which is required by a retail automobile spare parts shop. The retail shop deals with a large variety of automobile spare parts procured from various manufacturers. The shop owner maintains different parts in wall mounted and numbered racks.</p> <ul style="list-style-type: none"> At the end of each day, the shop owner would request the computer to generate indents for the items which are out of stock. The computer should print out the parts description, the quantity required, and the address of the vendor supplying the part. The 	<p>CO-4, CO-6</p>

	<p>shop owner would have to simply put these printouts into envelopes and courier them to the address printed.</p> <ul style="list-style-type: none"> • Whenever new supplies arrive, the shop owner should be able to update the inventory. • Whenever any sales occurs, the shop owner would enter the code number of the parts and the corresponding quantities sold. AAS should print out the cash receipt, and adjust the inventory. <p>The computer should also generate report of the revenue for any specified day and month, when queried by the owner.</p> <ol style="list-style-type: none"> I. Draw the use-case diagram for the above software. II. Draw the sequence diagrams for any three use cases. III. Draw the class diagram. 	
	<p>(a) Suppose you are given the details of a small mail order catalogue system that allows people to shop from home. When a customer receives the catalogue and wants to buy something, they can telephone, fax or e-mail their order to the company. The company gets the order and sends the goods and an invoice. When the customer receives the goods with a delivery note, they send payment and receive a receipt for their payment. Draw the level 0 and level 1 DFD for the above system.</p> <p>(b) What is LOC? How we estimate LOC of a Software product? List two short comings of LOC.</p>	
	<p>(a) What do you mean by association among classes? Explain types of associations with suitable example.</p> <p>(b) Suppose an organization has been assessed at level 3 of SEI CMM, what you can infer about the current quality practices at the organization? How the organization can reach at level 4 and level 5?</p>	