

**Enrollment No.....**

Faculty of Engineering  
End Sem (Odd) Examination Dec-2022  
CS3CO26 / IT3CO22 Software Engineering  
Programme: B.Tech. Branch/Specialisation: CSE/IT

**Duration: 3 Hrs.****Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. Which is not one of the fundamental activities in a software process? **1**  
 (a) Software specifications (b) Software development  
 (c) Software cost negotiation (d) Software validation
- ii. Component based software engineering is not characterized with- **1**  
 (a) Reduced costs and risks  
 (b) Faster delivery  
 (c) Reuse oriented  
 (d) Large amount of developed code
- iii. SRS must include characteristics except- **1**  
 (a) Scope of the software product  
 (b) User characteristics  
 (c) Functional and non-functional requirements  
 (d) Programming logic and algorithm
- iv. Number of objects that participate in the relationship is called as- **1**  
 (a) Cardinality (b) Inheritance (c) Association (d) Coupling
- v. Design includes- **1**  
 (a) Feasibility analysis (b) Interface and data design  
 (c) Test framework (d) Cost estimations
- vi. Choose the correct statement- **1**  
 (a) A sub-system is an incomplete system  
 (b) A module is decomposed into sub-systems  
 (c) Coupling is relative independence amongst modules  
 (d) Modularity is manifestation of separation of concerns
- vii. Smoke Testing is done when- **1**  
 (a) Product is ready (b) Analysis is complete  
 (c) Design is ready (d) None of these

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viii.	Risk management includes-	1
	(a) Fault documentation (b) Business negotiation	
	(c) Risk monitoring and mitigation (d) All of these	
ix.	Software Metrics helps to-	1
	(a) Improve the process (b) Assess quality	
	(c) Control the project (d) All of these	
x.	Software development cost does not include-	1
	(a) Quality control cost (b) End user training cost	
	(c) Maintenance cost (d) Marketing cost	
Q.2	i. Define software engineering. Write the generic activities of any software development process.	2
	ii. Justify that- Programs that are developed using evolutionary development are likely to be difficult to maintain.	3
	iii. Explain how both the waterfall model of the software process and the prototyping model can be accommodated in the spiral process model.	5
OR	iv. Discuss the advantages and disadvantages of waterfall model, component based development model and iterative model.	5
Q.3	i. Define the various types of user and system requirements.	4
	ii. Develop an object model, including a class hierarchy diagram and an aggregation diagram showing the principal components of a personal computer system and its system software.	6
OR	iii. Based on your experience with a bank ATM, draw a data-flow diagram modelling the data processing involved when a customer withdraws cash from the machine.	6
Q.4	i. Do you design software when you “write” a program? What makes software design different from coding?	2
	ii. What is the role of architectural design in SDLC? Classify various architecture styles.	3
	iii. What are the attributes of class-based modelling? Take a scenario to crisply identify potential classes and appropriate relationship amongst them.	5
OR	iv. Perform task analysis and evaluate user interface designs for any one of the systems – Library management, Course registration system or Banking application.	5

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Q.5	i. Differentiate between validation and verification taking suitable example.	4
	ii. Explain various quality characteristics of software. What are the various metrics for quality?	6
OR	iii. Explain various black box and white box testing techniques.	6
Q.6	Attempt any two:	
	i. Compare size oriented and function oriented metrics.	5
	ii. Write a short note on - Cost drivers in COCOMO model.	5
	iii. Write a short note on - Object oriented metrics.	5

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**Marking Scheme**  
**CS3CO26 / IT3CO22 Software Engineering**

Q.1	i.	Which is not one of the fundamental activities in a software process? (c) Software cost negotiation	1
	ii.	Component based software engineering is not characterized with- (d) Large amount of developed code	1
	iii.	SRS must include characteristics except- (d) Programming logic and algorithm	1
	iv.	Number of objects that participate in the relationship is called as- (a) Cardinality	1
	v.	Design includes- (b) Interface and data design	1
	vi.	Choose the correct statement- (d) Modularity is manifestation of separation of concerns	1
	vii.	Smoke Testing is done when- (a) Product is ready	1
	viii.	Risk management includes- (c) Risk monitoring and mitigation	1
	ix.	Software Metrics helps to- (d) All of these	1
	x.	Software development cost does not include- (c) Maintenance cost	1
Q.2	i.	Definition of software engineering Generic activities of any software development process	1 mark 1 mark
	ii.	Justify that- Programs that are developed using evolutionary development are likely to be difficult to maintain. As per the explanation	3
	iii.	Both the waterfall model of the software process Prototyping model can be accommodated in the spiral process model.	2.5 marks 2.5 marks
OR	iv.	Advantages and disadvantages of waterfall model, component based development model and iterative model. 1 marks for each	5
Q.3	i.	Types of user and system requirements. 1 mark for each	4

	ii.	Develop an object model, including a class hierarchy diagram and an aggregation diagram showing the principal components of a personal computer system and its system software. As per the explanation	6
	OR iii.	Based on your experience with a bank ATM, draw a data-flow diagram modelling the data processing involved when a customer withdraws cash from the machine. As per the explanation	6
Q.4	i.	Do you design software when you “write” a program Software design different from coding	1 mark 1 mark
	ii.	Role of architectural design in SDLC Classification of architecture styles	1 mark 2 marks
	iii.	Attributes of class-based modelling Take a scenario to crisply identify potential classes and appropriate relationship amongst them.	2 marks 3 marks
OR	iv.	Perform task analysis and evaluate user interface designs for any one of the systems – Library management, Course registration system or Banking application. As per the explanation	5
Q.5	i.	Differentiate between validation and verification 1 mark for each difference	4
	ii.	Quality characteristics of software Metrics for quality	3 marks 3 marks
OR	iii.	Black box testing techniques White box testing techniques.	3 marks 3 marks
Q.6	Attempt any two:		
	i.	Compare size oriented and function oriented metrics. 1 mark for each	5
	ii.	Write a short note on - Cost drivers in COCOMO model. As per the explanation	5
	iii.	Write a short note on - Object oriented metrics. As per the explanation	5

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