Modified

CBCS SCHEME

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BCS501

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Software Engineering and Project Management

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain software process and software engineering practices.	10	L2	CO1
	b.	Explain the waterfall model and incremental model, with diagram.	10	L2	CO1
		OR			
Q.2	a.	Explain Boehm Spiral process model with a neat diagram. Mention its advantages and disadvantages.	10	L2	CO1
	b.	Explain the five activities of a generic process framework for software engineering.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain the distinct tasks of requirement engineering.	10	L2	CO2
	b.	Illustrate the UML use case diagram for safe home system.	10	L2	CO2
		OR			
Q.4	a.	Explain Class-Responsibility-Collaborator(CRC) modeling and data modeling with an example.	10	L2	CO2
	b.	Explain the elements of analysis model in requirement modeling.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain the principles of agile process development.	10	L2	CO3
	b.	Explain the following : i) Adaptive software development ii) SCRUM	10	L2	CO3
		OR			
Q.6	a.	Explain the concepts of extremes programming with a neat diagram.	10	L2	CO3
	b.	Explain design modeling principles that guide the respective framework activity.	10	L2	CO3
		Module – 4			
Q.7	a.	Illustrate the project management life cycle with a neat diagram.	10	L2	CO4
	b.	Explain : i) Different ways of categorizing software projects ii) Smart objectives	10	L2	CO4
		OR			
Q.8	a.	Explain the difference between traditional versus modern project management practices along with the role of management.	10	L3	CO4
	b.	Explain software development life cycle (ISO 12207) with a neat diagram.	10	L2	CO4
		Module – 5			
Q.9	a.	Explain Quality Management System with principles of BS EN ISO-9001-2000.	10	L2	CO5
	b.	Explain the following : i) McCall model ii) Garvin's Quality Dimensions.	10	L2	CO5
		OR			
Q.10	a.	Describe six generic functions allowed in automated estimation techniques of software projects.	10	L3	CO5
	b.	Explain COCOMO II model.	10	L2	CO5

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Re: Sir, Scheme Modification

"Dr.Sampath S" <23.sampath@gmail.com> January 10, 2025 2:00 PM

To: boe@vtu.ac.in

Dear Sir,

Question no 9.a (BCS501)is slightly varied in question, as per the sub section of the given textbook,the topic is not in the syllabus. Hence 9 a is considered as out of syllabus. If student attempted a question of 9 a then marks may be given.

On Fri, Jan 10, 2025, 11:54 AM Dr.Sampath S <23.sampath@gmail.com> wrote:

> Dear Sir,
>
> **Question no 9.a (BCS501)is slightly varied in question, as per the sub section of the given textbook,the topic is not in the syllabus. Hence 9 a is considered as out of syllabus.**
>
> On Fri, Jan 10, 2025 at 9:40 AM <boe@vtu.ac.in> wrote:

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Scheme & Solutions Signature of Scrutinizer

Subject Title : Software Engineering & Project Mgmt **Subject Code :** BCS501.

Question Number	Solution	Marks Allocated
1. a)	Software Definition - Software is a set of items or objects that form a 'configuration' that includes programs, documents and data. - 2M. Software Engineering Defn' - 2M (May or may not be considered) Software Process - 2M. +2M Practices of software engineering. - 4M +2M *. Understand the problem. *. Plan the solution. * Carry out the plan. *. Examine the result. for accuracy.	10M.
b)	Waterfall model - Explaination of 5 phases. Communication → Planning → Modeling → Construction → Deployment → 2M. Communication - Project initiation, requirements gathering. Planning - Estimating, scheduling, tracking. Modeling - Analysis, design. Construction - Code, Test. → 3M. Deployment - Delivery, Support, feedback. 5M.	10M.

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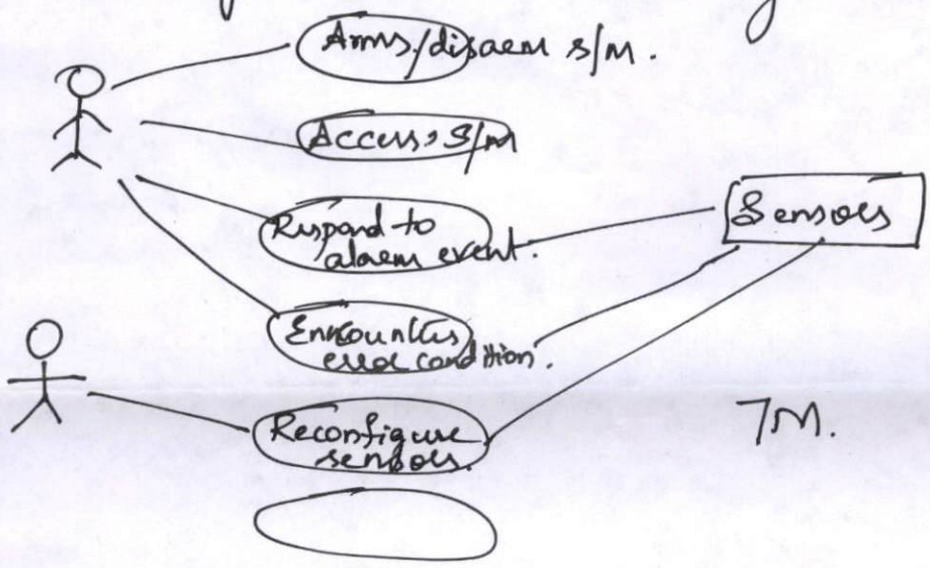
Subject Title : Software Engg & Project Mgmt Subject Code : BCS501.

Question Number	Solution	Marks Allocated
	Incremental model: Explanation - 3M. Diagram - 2M. 3+2 = 5M. or.	
2. a)	Spiral process model :- Explanation of. * Communication, Phases. * Planning, * modeling. * Construction. * deployment. 5M. Advantages & disadvantages - 3M. Diagram - 2M. 5+3+2 = 10M.	10M.
b)	Five activities of a generic Process framework. Communication, Planning, modeling, Construction and deployment. 5x2 = 10M. Explaination.	10M.
	Module - 2	
3. a)	Requirement Engineering Explaination - 3M. Distinct tasks of requirement engg are. Inception, Elicitation, Elaboration, Negotiation, Specification, validation, Requirement management → 7x1 = 7.	10M.
b)	Use. case - A collection of user scenarios. that describe the thread of usege of a system. 3M	10M

Subject Title : Software Engg & Project Mgmt Subject Code : BCS501.

Question Number	Solution	Marks Allocated
	Use Case diagram for Safe home system,  7M.	10M.
	OR.	
4. a)	Class-responsibility-collaborator (CRC) modeling provide a means for identifying and organizing the classes that are relevant to system or product requirements. Explanation - 3M. Example - 2M.	10M.
	Data modeling - The relationships between the data objects, and other information that is pertinent to the relationships. expln - 3M. example - 2M. 5+5=10.	
b)	Elements of the Analysis model. Scenario based models eg:- Use cases, User stories Class models, eg: Class diagrams, Behavioral models. eg:- State diagrams, Sequence diagrams Flow models. eg;- DFD's, data models. 4x2.5 = 10M	10M.

Subject Title : Software Engg & Project Mgmt Subject Code : BCS501

Question Number	Solution	Marks Allocated
	Module - 3	
5. a)	Agility Definition. - Response to change, communication, customer to the team, flexible, lean, incremental delivery of s/w, - 2M Agile process development principles. 8M * Satisfy customer. * Working s/w. * Welcome Changing. * Constant pace. * Deliver working s/w frequently. * Technical excellence. * Motivated individuals. * Simplicity * Daily work together * Self-organizing. * face-to-face conversation. * Tunes & adjusts.	10M.
b)	i) Adaptive software Development - phases. 1. Speculation 2. Collaboration 3. Learning. Explaination - 3M Diagram - 2M. 3+2 = 5M	10M.
	ii) Scrum - Explaination with distinguishing features like packets, Testing, documentation, Sprints, backlogs, demos - 5M.	
	or.	
6. a)	Extreme Programing (XP) - Planning. XP design, XP Coding, XP Testing, XP debate explaination - 8M. diagram - 2M. 8+2 = 10M	10M.
b)	Design modeling Principles. are traceable, Architecture of the s/w, Design of data,	

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Question Number	Solution	Marks Allocated
	User interface design, component-level design, Components loosely coupled, design representations, Iteration. explanation -10M	10M.
	Module -4.	
7. a)	Projects are not always successful due to shortcoming in managing projects. - 2M (NA) Project Management life cycle. explanation - 5M. Project initiation; Project execution, Project closing, diagram - 3M. + 2M 5+3+2=10M	10M.
b)	(ii) S - Specific, M - Measureable, A - Achievable, R - Relevant, T - Time Constrained. SMART Objectives explanation - 5M.	10M
	(i) Different ways of categorizing projects. * Compulsory vs. voluntary users * Information s/ms vs Embedded s/ms. * Objectives vs. Products :--- 5M.	
8. 8. a)	Role of Management in S/W Project Management are. Planning, Organizing, Staffing, Directing → 5M. Monitoring, Controlling, Innovating, Representing. Traditional Vs modern Project management practices. 1. Planning incremental. delivery. → 5M. 2. Quality management. 4. Requirements management 3. Change management. 5. Release management.	10M.

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Question Number	Solution	Marks Allocated
8. b)	A Project is a temporary endeavor undertaken to create a unique product, service or result, → 2M Software Development Life cycle (ISO 12207) *Requirements analysis *Qualification testing *Architecture design. *Installation. *Code and test. *Acceptance Support. *Integration. Explaination – 6M. Diagram – 2M.	10M.
9. a)	ISO 9001 describes how a Quality Management System can be applied to the creation of products and the provision of services. → 2M. Principles → 8x1 = 8M * Understanding requirements *focus on systems * Leadership. * Continuous improvement. * Involvement of staff. * Decision making. * focus on individual processes * Building relationships.	10M.
b)	McCall model.	
i)	McCall proposed a useful of factors that affect software quality, which focus on three important aspects of software product → 2M. *Product Revision: Maitainability, flexibity, Testability.	10M.

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Question Number	Solution	Marks Allocated
	Product Transition : Portability, Reusability, Interoperability. Product Operation : Correctness, Reliability, Usability, Integrity, Efficiency. Explanation – 3M. Diagram – 1M. 1+3+1=5M.	10M.
ii)	Garvin's Quality Dimension. Eight dimensions are Performance quality, Feature quality, Reliability, Conformance, Durability, Serviceability, Aesthetics, Perception. → 5M.	
10. a)	Software Project Estimation Defn – 3M Six generic functions followed in automated estimation techniques are. 1. Sizing of Project deliverables. → 7M. 2. Selecting project activities. 3. Predicting staffing levels. 4. Predicting s/w effort. 5. Predicting s/w cost. 6. Predicting software schedules.	10M.
b)	~~Empirical estimation model Defn – 3M~~ COCOMO II model consists of. * Application composition model. * Early design stage model. * Post architecture-stage model. Expln – ~~7M~~ 7M. 10M	10M.