FR. CONCEICAO RODRIGUES COLLEGE OF ENGG.

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SEMESTER / BRANCH: V/COMPUTER Engineering

SUBJECT: Software Engineering **(CSC502)/ First Assignment**

Date: 19-08-23 Due Date : 25-08-23

CSC502.1: Recognize software requirements and various process models. (Understanding)
CSC502.2: Develop project Plan, schedule and track the progress of the given project (Applying)

Questions :

1. What is the significance of recognizing software requirements in the software engineering process?
2. Describe the main characteristics of different process models used in software development.
3. How does the Capability Maturity Model (CMM) contribute to improving software development processes?
4. Explain the differences between prescriptive process models and evolutionary process models.
5. Provide examples of situations where using a specific process model would be more suitable.
6. Compare and contrast the Waterfall model and Agile methodologies in terms of project planning and progress tracking.
7. Apply process metrics to evaluate the efficiency and effectiveness of Waterfall , Agile (both Scrum & Kanban) methodologies, considering factors such as development speed, adaptability to change and customer satisfaction.
8. Justify the relevancy of the fallowing comparison for software development models.

Features	Water fall Model	Incremental Model	Prototyping Model	Spiral Model
Requirement Specification	Beginning	Beginning	Frequently Changed	Beginning
Understanding Requirements	Well Understood	Not Well Understood	Not Well Understood	Well Understood
Cost	Low	Low	High	Expensive
Availability of reusable component	No	Yes	Yes	Yes
Complexity of System	Simple	Simple	Complex	Complex
Risk Analysis	Only at beginning	No risk analysis	No risk analysis	Yes
User involvement in all phases of SDLC	Only at beginning	Intermediate	High	High
Guarantee of Success	Less	High	Good	High

Overlapping Phases	Absent	Absent	Present	Present
Implementation Time	Long	Less	Less	Depends on Project
Flexibility	Rigid	Less flexible	Highly flexible	Flexible
Changes Incorporated	Difficult	Easy	Easy	Easy
Expertise Required	High	High	Medium	High
Cost Control	Yes	No	No	Yes
Resource Control	Yes	Yes	No	Yes

Rubrics :

Indicator	**Average**	**Good**	**Excellent**	**Marks**
Organization (2)	Readable with some mistakes and structured (1)	Readable with some mistakes and structured (1)	Very well written and structured (2)	
Level of content(4)	Minimal topics are covered with limited information (2)	Limited major topics with minor details are presented(3)	All major topics with minor details are covered (4)	
Depth and breadth of discussion(4)	Minimal points with missing information (1)	Relatively more points with information (2)	All points with in depth information(4)	
Total Marks(10)				

1) Ans> Recording software requirements is significant because :
- It helps ensure software meets needs of its users
- Reduces the scope of creep
- Helps improve communication between stakeholders
- Helps facilitate testing and validation
- Increases the chances of success
- reduces risk of failure

2) a) Waterfall model
- follows linear sequential process
- well defined phases
- Sign off at each phase

b) V model
- V shaped
- Early test planning
- concurrent development and testing

c) Incremental model
- iterative and incremental
- Early delivery of working software
- feedback from users

d) Spiral model
- Risk driven
- iterative and incremental
- Risk assessment and mitigation

3) It Contributes to in improving development in the following way
- provides common framework to improve Software development
- Helps identify and improve on most important areas
- provides roadmaps for development
- Reduces costs
- improves quality

4) Characteristic	prescriptive models	evolutionary models
Approach flexibility	sequential less flexible	incremental more flexible
Adaptability	less adaptable	more adaptable
Rigor and discipline	more Rigorous and disciplined	less Rigorous and disciplined

5.) (a) Waterfall Model - suitable for small projects with well defined requirements
(b) V model - for projects with complex requirements
(c) Incremental model - for projects with changing requirements
(d) Spiral model - for projects with high risky
(e) Agile model - projects with changing requirements

a) Characteristic	Waterfall Model	Agile Methodologies
project planning	At start of project	done throughout project
progress tracking	Done by tracking completions of Milestones	Done on a continuous basis throughout sprint

7)

Characteristic	Waterfall	Scrum	Kanban
planning	done upfront	Done on ongoing basis	Done on ongoing basis
progress tracking	Done on completion of milestones	Done throughout the sprint	Done continuously on kanban board
Development speed	can be slow	can be fast	fast
adaptability to change	low	Very high	Very high
customer satisfaction	low if requirements change	high	high due to customer involvement