

Internal Assessment Test 3 – July 2024

Sub:	SOFTWARE ENGINEERING & PROJECT MANAGEMENT	SubCode:	21CS61	Branch:	AI&DS					
Date:	27/07/2024	Duration:	90 min's	MaxMarks:	50	Sem/Sec:	VI 'A'	OBE		
Answer any FIVE FULL Questions								MARKS	CO	RBT
1	<p>How to categorize the software projects, explain the ways</p> <p><u>Categorize the software projects: 8 Marks</u> <u>Ways: 2 Marks</u></p> <ul style="list-style-type: none"> • Projects may differ because of the different technical products to be created. • So we need to identify characteristics of a project which could affect the way in which project should be planned and managed. • Categories <ul style="list-style-type: none"> • Compulsory Vs Voluntary systems • Information Vs Embedded systems • Objective-based Vs Product-based systems <p style="text-align: center;">Compulsory Vs Voluntary systems</p> <ul style="list-style-type: none"> • Compulsory systems are the systems which the staff of an organisation have to use if they want to do a task. • voluntary systems are the systems which are voluntarily used by the users eg. computer gaming, school project, etc. <p style="text-align: center;">Information Vs Embedded systems</p> <ul style="list-style-type: none"> • Information systems are used by staff to carry out office processes and tasks eg. stock control system. • Embedded systems are used to control machines eg. a system controlling equipment in a building. <p style="text-align: center;">Objective-based Vs Product-based systems</p> <ul style="list-style-type: none"> • Project whose requirement is to meet certain objectives which could be met in a number of ways, is objective-based project. • Project whose requirement is to create a product, the details of which have been specified by the client, is product-based project. 						10	CO1	L2	
2	<p>What is project planning process and mention the resources used in project development and with examples</p>						10	CO1	L2	

Project planning process: 5 Marks

Resources: 5 Marks

Project Planning Process

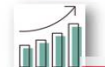
7. Identify Communication Plan:

- A communication plan is a tool that able to effectively communicate about a project to your client, team and other stakeholders.
- Communication plan has clear guidelines about how information will be shared & who is responsible within the project.



8. Provide Tracking & Management:

- It is an effective way to deliver projects on time and organize tasks.
- Features of this element include planning/scheduling, collaboration, documentation and evaluation.
- Management tools are track productivity and growth of project.



Recourses Used in Project Development

- Project resources simply mean resources that are required for successful development and completion of project on time and on budget.

Type 1: Human Recourses

- In software industry, manager, software developer, software testing and so on.
- These positions are according to their skills and specialty.



Type 2: Reusable Components

- Managing budget for project is one of most important tasks that all project managers.
- The reusable resources are very helpful as they help in reducing overall cost of development.

Type 3: Hardware and Software tools

- It should be planned before starting development of project otherwise it way causes problems.
- These are actually material resources that are part of project.

3

What is business case, explain the use business case and how the project success and failure will be identified

Business Case: 3 Marks

Use of Business case: 3 Marks

Project success and failure: 4 Marks

- A decision support/planning system or tool / document
- It helps analyze the consequences of some decisions
- Usually it is in the form of report & may contain
 - ✓ Background/History
 - ✓ Facts & Figures, validity period of the document
 - ✓ Risks & Mitigation plans
 - ✓ Recommendations
 - ✓ E.g. of Business case is a Study Report for "Why should we buy 34 Mbps Link?"

10

CO2

L1

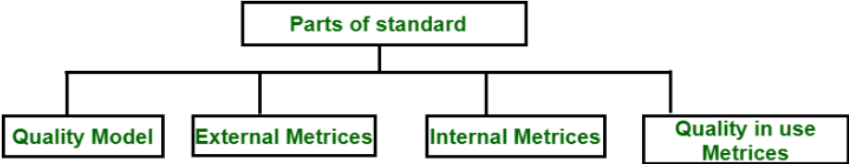
Project Success and Failure

- The project plan should be designed to ensure project success by preserving the Business Case for the project
- The project objectives are the targets that the project team is expected to achieve. Hence the success and failure depends upon the following factors
 - (a) Agreed Functionality
 - (b) Required level of quality
 - (c) On time and within the budget
- A project could meet the target but the application once delivered could fail to need the Business case, such possibilities should be tested before releasing the project.

4a	Differentiate product and process quality management.		5	CO1	L2
<u>Product: 2.5 Marks</u>					
<u>Process: 2.5 Marks</u>					
S. No	Product	Process			
1.	Product is the final production of the project.	While the process is a set of sequence steps that have to be followed to create a project.			
2.	A product focuses on the final result.	Whereas the process is focused on completing each step being developed.			
3.	In the case of products, the firm guidelines are followed.	In contrast, the process consistently follows guidelines.			
4.	A product tends to be short-term.	Whereas the process tends to be long-term.			
5.	The main goal of the product is to complete the work successfully.	While the purpose of the process is to make the quality of the project better.			

	6.	Product is created based on the needs and expectations of the customers.	A process serves as a model for producing various goods in a similar way.			
	7.	A product layout is a style of layout design in which the materials required to make the product are placed in a single line depending on the order of operations.	When resources with similar processes or functions are grouped together, it is referred to as a process layout.			
	8.	Product patents are thought to offer a greater level of protection than process patents.	A process patent provides the inventor only limited protection.			

4b	Differentiate product and process metrics. <u>Product: 2.5 Marks</u> <u>Process: 2.5 Marks</u> <h3 style="text-align: center;">Product Metrics</h3> <ul style="list-style-type: none"> ■ Performance <ul style="list-style-type: none"> ■ Lots of measurements, lack of good metrics ■ Reliability <ul style="list-style-type: none"> ■ Defect density: Defects per KLOC (“1000 lines of code”) ■ Failure intensity: Number of failures per (hour of) operation ■ Availability <ul style="list-style-type: none"> ■ Uptime % <h3 style="text-align: center;">Project Metrics</h3> <ul style="list-style-type: none"> ■ Cycletime <ul style="list-style-type: none"> ■ Elapsed time from requirements to delivery ■ Productivity <ul style="list-style-type: none"> ■ Size of delivered software / total effort ■ Rate of Requirements Change <ul style="list-style-type: none"> ■ % of requirements that changed plotted vs. time ■ High requirements change will affect estimation accuracy, cycletime, quality 			5	CO2	L2
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<p>5</p>	<p>What is ISO/IEC 9126? Also explain the Parts of ISO/IEC 9126 with examples</p> <p>ISO 9126: 5 Marks Parts of ISO 9126: 5 Marks</p> <p>ISO/IEC 9126 is an international standard proposed to make sure ‘quality of all software-intensive products’ which includes a system like safety-critical where in case of failure of software lives will be in jeopardy. ISO i.e. International Organization for Standardization and IEC i.e. International Electrotechnical Commission have developed ISO/IEC 9126 standards for software engineering → Product Quality to provide an all-inclusive specification and evaluation model for the quality of the software product.</p> <p>Parts of ISO/IEC 9126</p> <p>The standard is divided into 4 parts as depicted in the following figure:</p>  <pre> graph TD A[Parts of standard] --> B[Quality Model] A --> C[External Metrics] A --> D[Internal Metrics] A --> E[Quality in use Metrics] </pre> <p style="text-align: center;"><i>Parts of Standard</i></p> <ol style="list-style-type: none"> 1. ISO/IEC 9126-1: Quality Model 2. ISO/IEC 9126-2: External Metrics 3. ISO/IEC 9126-3: Internal Metrics 4. ISO/IEC 9126-4: Quality in use Matrices 	<p>10</p>	<p>CO2</p>	<p>L2</p>
<p>6</p>	<p>Explain the following i) software quality, ii) quality models, iii) testing, iv) Software reliability, v) quality plans.</p> <p>Each Definition: 2 Marks</p> <p>Software quality: Traditionally, a high-quality product is outlined in terms of its fitness of purpose. That is, a high-quality product will specifically be what the users need to try. For code merchandise, the fitness of purpose is typically taken in terms of satisfaction of the wants arranged down within the SRS document.</p> <p>Quality models: Quality models are created based on some building blocks including quality objectives, factors, criteria, sub-criteria, and metrics. A quality model can include all or a part of these building blocks. Quality objectives should be identified according to the non- functional requirements of a software product.</p> <p>Testing: Software testing is the process of evaluating and verifying that a software product or application does what it's supposed to do. The benefits of good testing include preventing bugs and improving performance. Verify and validate application quality to ensure it meets user requirements.</p> <p>Software reliability: Software reliability can be defined as the probability of failure-free operation of a computer program in a specified environment for a specified time.</p> <p>Quality plans: In software, a quality assurance plan is the set of procedures, tools,</p>	<p>10</p>	<p>CO2</p>	<p>L1</p>

	and techniques that testers can use to ensure that an app or service meets the software requirements.			
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