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Ans to the Qus NO: 01 (a)

① Ans: Software Engineering:

Software engineering is a disciplined and systematic approach to designing, developing, testing and maintaining software applications or systems. It involves the applications of engineering principles to create reliable, efficient, and high-quality software that meets the needs of users and stakeholders.

Ans to the Qus NO: 01 (b)

01(b) Ans

Ans to the Qus No:01 (b)Ans: Waterfall Model:

The waterfall model is a traditional software development methodology that follows a linear and sequential approach. It consists of several distinct phases, each building on the outputs of the previous phase. The phases in the waterfall model typically includes:

① Requirements Gathering: In this phase, project requirements are gathered from stakeholders. It involves detailed discussions and analysis to understand the project scope and objectives.

② System designs: The gathered requirements are used to create a system design document. This phase involves planning the software architecture, system components, and data flow.

③ Implementations:

In this phase, the actual coding and programming of the software occur. Developers write code based on the design specifications outlined in the previous phase.

④ Integration and testing:

The individual components or modules developed in the previous phase are integrated into a

complete system. Testing is performed to identify defects and ensure that the system functions as intended.

⑤ Deployment: Once the software passes development and validation, it is deployed to the customer environment. This phase involves installation, configuration, and sometimes training for end users.

⑥ Maintenance: After deployment, the system requires maintenance to fix bugs, update features, and address issues that arise in the operational phase.

Validation Process:

Validation is the process of evaluating a system or component during or at the end of development process to determine whether it satisfies the specified requirements. Here are the key steps

in the validation process:

① Planning: Define the validation objectives, scope, and criteria. Create a validation plan outlining the testing strategies, resources, and schedules.

② Testing: Execute various types of testing such as functional testing, performance testing, security testing, and user acceptance testing to ensure that the system meets the specified requirements.

③ Verification: Compare the developed system with the requirements to verify that all the requirements have been implemented correctly.

④ Validating Testing:

Validate the system from the end-user's perspective to ensure it fulfills their needs and expectations. User acceptance testing is a common form of validation testing.

⑤ Documentation: Document the results of (validating testing, including any issues found, resolutions, and approval of the system's compliance with the requirements.

⑥ Review and approval: Review the validation results with stakeholders and obtain their approval for the system to move forward in the development process or be deployed to the users.

Both the waterfall model and the validation process are crucial in ensuring that a software product is developed systematically, meets the desired quality standards, and it satisfies the users' requirements.

Ans to the Qus NO:01 (c)

Ans: Characteristics of a good SRS

An SRS should be:

- a) correct.
- b) Unambiguous.
- c) Complete.
- d) Consistent.
- e) Ranked for importance and/or stability.
- f) Verifiable.
- g) Modifiable.
- h) Traceable.
- i) Usable during the operation and

maintainance phase.

Ans to the Qus NO:02 (a)

Ans: Categories of Software maintainance,

Software maintainance:

① Corrective maintainance:

This refer to modifications initiated by defects in the software

② Adaptive maintenance:

It includes modifying the software to match changes in the ever changing environment.

③ Perfective maintenance:

It means improving processing efficiency or performance, or restructuring the software to improve changeability. This may include enhancement of existing system functionality. Improvement in computational efficiency etc.

Ans to the Qus No : 02 (5)

Ans:

Black Box testing	White Box testing
<p>① The Black box test is a test that only considers the external behavior of the system, the internal working of the software is not taken into account.</p>	<p>① The white box test is a method used to test a software taking into consideration its internal functioning.</p>
<p>② It is carried out by testers.</p>	<p>② It is carried out by software developers.</p>

③ This method is used in System testing or Acceptance testing.

④ It is the last time consuming.

⑤ It is the behavior testing of software.

⑥ It is also known as data-driven testing, functional testing and closed box testing.

③ This method is used in Unit testing or integration testing.

④ It is most time consuming.

⑤ It is the logic testing of the software.

⑥ It is also known as clear box testing, code-based testing, structural testing, and transparent testing.

Ans to the Qus No: 02 (c)

Ans: Software Quality Assurance plan abbreviated as SQAP comprises of procedures techniques, test strategy and tools which makes sure that services are aligned within the defines SRS (Software Requirement Specification). The SQA consists of following section in PPT PLAN document.

- ① Purpose.
- ② Reference.
- ③ Software Configuration management.
- ④ Problem reporting and corrective action.
- ⑤ Tools, technologies and methodologies.
- ⑥ Code control.
- ⑦ Records : Collection, maintenance and retention.
- ⑧ Testing methodology.

Ans to the Qus NO: 03 (a)

Ans: Software project management is the process of planning and leading software projects. It is a sub-discipline of project management in which software projects are planned, implemented, monitored, and controlled.

It is an art and discipline of planning and supervising software projects. It is a sub-discipline of software project management in which software projects planned, implemented, monitored and controlled.

Ans to the Qus NO:03(b)

Ans: Role of the project manager:

The project manager is the individual responsible for delivering the project. The individual leads and manages the project team, with authority and responsibility from the project board. to run the project on a day-to-day basis.

As well as the formal responsibilities set out in methods such as, the project manager has an important role in interfacing between the project and the business area. This is important for communicating and encouraging the need for transformation and change within business area. This is in tandem with the deliver of new capabilities from the project. The readiness of the business, there are likely to be disruptions and delays in the plan for benefits realisation.

Specific responsibilities of the project manager

The project manager, operating within agreed reporting structures, is responsible for:

* designing and applying appropriate project management standards for incorporation in the NI Gateway Review process.

* managing the production of the required deliverables.

* Planning and monitoring the project.

* Adopting any delegation and use of project assurance roles within agreed reporting structure

* Preparing and maintaining project, stage and exception plans as required.

* managing project risks; including the development of contingency plans.

* Liaison with programme management (if the project is part of a programme) and related projects to ensure that work is neither overlooked nor duplicated.

* maintaining an awareness of potential interdependencies with other projects and their impact.

* preparing any follow-on action recommendations

Ans to the Qus No: 03 (c)

Ans: Iterative model:

The iterative model is a software development methodology where the project is divided into small parts or iterations. Development allows for revisiting and refining previous stages before moving on to the next iteration. It emphasizes repetition for feedback, enabling continuous improvement. Here are the advantages and disadvantages of the iterative model.

Advantages:

① Flexibility: The iterative model allows for changes and adjustments to be made easily during the development process. It accommodates changing requirements effectively.

② Feedback loop: Regular iterations mean that stakeholders and users get to see a working version of the software sooner, providing valuable feedback that can be incorporated in subsequent iterations.

③ Risk Management: Issues and risks can be identified and addressed early in the development process, reducing the probability of major problems later on.

④ Progress Visibility: Since there are multiple iterations, project progress is visible at regular intervals, making it easier to track the project's status.

Disadvantages:

① Complexity: Managing multiple iterations simultaneously can be complex.

② Higher Costs: The iterative model may require more time and resources due to the repetitive nature of the process.

③ Uncertain End Date: Because the project doesn't have a fixed endpoint and can continue to iterate, it can be challenging to predict an exact completion date.

Ans to the Ques No: 09 (a)

Ans: Quality:

Quality makes sure that a high-class product is being produced. Quality is important for customer satisfaction that ultimately results in customer loyalty. Quality management assists an organisation to create and developing a product service which is desired by the customers.

Importance of quality:

Meeting the expectations of the customers:

Irrespective of the industry, customers will not choose particular product merely based on the price, sometimes often on quality. According to some studies, customers are willing to pay a higher price for a product or service if they consider it as a well-made product that surpasses the quality standards.

Gaining competitive advantage:

Companies want to attain competitiveness with differentiation. This happens when there are distinctive qualities in a product that can not be imitated by rivals. A B

Quality is crucial for the satisfaction of customers:

If an organization fails to meet the expectation of its customers, then it will look for replacements. Quality is essential to satisfy customers in order to retain their loyalty so that they will be willing to buy in the future as well.

Quality develops reputation:

Quality signals on an organization's reputation. Nowadays, there is an increasing significance of social media which means that the customers can effortlessly share both positive and negative opinions on the quality of a product/service on different platforms.

Influence on sales volume:

If a product matches the requirements of the customers, then the demand for that particular product will increase, hence allowing the company to boost its profit levels. As people become wealthier, their desire for good quality products also increases as they are not constricted by their income.

Quality helps in managing costs effectively:

Poor quality products escalate costs. If an organization does not have an efficient quality control system, they may have to bear costs to assess peculiar products in order to evaluate the main causes.

Ans to the Qus NO: 04 (b)

Ans: Software Quality Assurance (SQA): activities encompass a set of systematic and planned actions to ensure that software processes and products adhere to specified requirements and standards. These activities are vital in guaranteeing the quality and reliability of software applications. here are the key SQA activities:

- * Process Definition.
- * Process implementation.
- * Quality standards and procedures.
- * Establish standards.
- * Compliance Monitoring.
- * Reviews and Audits.
- * Design and Documentation Reviews.
- * Process Audits.
- * Testing and Validation.
- * Test Execution.
- * Defect Reporting.
- * Training and Resource management.
- * Training.
- * Resource Allocation.

* Measurement and Metrics.

* Define Metrics.

* Data Collection and Analysis.

* Continuous Improvement.

* Process Improvements.

* Best Practice Adoption.

* SQA activities are integral to achieving high-quality software products, ensuring they meet user requirements, perform reliably, and are delivered within specified timeframes and budgets.