Name:- R. Madhu Sudhan
Roll.No:- 17691A0568
Section:- CSE-B
Subject:- Software Engineering

1. List characteristics of Software:
Software is defined as collection of Computer Programs, Procedures, rules & data. Software characteristics are classified into six major components. there are

1. Functionality
2. Efficiency
3. Reliability
4. usability
5. Maintainability
6. Portability

2. what do you mean by Prototype.
Software Prototyping is the activity of Creating Prototypes of Software applications, i.e., incomplete versions of the Software Program being developed. A Prototype typically simulates only a few aspects of and may be completely different from the final Product.

3. Define data dictionary.
A data dictionary is a file or a set of files that includes a databases metadata.

the data dictionary hold records about other objects in the database, such as data ownership, data relationships to other objects, and other data.

4. Differentiate between Verification and Validation.

Verification:- Verification is the process of checking that a software achieves its goal without any bugs. It is the process to ensure whether the product that is developed is right or not. It deals with are we building the product right?

Validation:- Validation is the process of checking whether the software product is upto the mark or in other words product has high level requirements.

It is the process of checking the validation of product i.e., it checks what we are developing is the right product. It is the validation of actual and expected product. Validation is the dynamic testing validation means are we building the right product?

5. List the various design quality attributes.

Software quality attributes are Correctness, Reliability, Adequacy, Learnability, Robustness, Maintainability, Readability, Extensibility, Testability, Efficiency, Portability.

6. Define OCL.

The object Constraint Language is an Expression language that describes constraints on object-oriented languages and other modelling artifacts. OCL is part of unified Modelling Language (UML) and it plays an important role in the analysis phase of the Software lifecycle.

7. Define unit testing.

unit testing is a level of Software engineering testing where individual units/components of a Software are tested. The purpose is to validate that each unit of the Software perform as designed. A unit is the smallest testable part of any Software. It usually has one of a few inputs and usually a single output.

8. What is meant by debugging?

Debugging is the iterative process of locating and removing computer program bugs, errors or abnormalities, which is methodically handled by Software programmers via debugging tools. Debugging checks, detects and corrects errors or bugs to allow proper program operation according to Set Specifications.

9. Differentiate between formal and technical review.

Formal review evaluates conformance to specifications and various standards. Formal review is conducted by 3 or more individuals.

Formal review consists of six important steps:

1. planning 2. kick-off 3. Preparation
4. Review meeting 5. Rework 6. Follow up

Technical review:-

⇒ It is less formal review.
⇒ It is led by the trained moderator but can also be led by a technical expert.
⇒ It is often performed as a peer review without management participation.

the goals of technical review:

1. To ensure that an early stage the technical Concepts are used Correctly.
2. To access the Value of technical Concepts and alternatives in the Product.
3. To have consistency in the use and representation of technical Concepts.
4. To inform participants about the technical Content of the document.

10. Define Software review.

Software review is Systematic inspection of a Software by one or more individuals who work together to find and resolve errors and defects in the Software during the early stages of Software development life cycle.

objectives of Software reviews:

1. To improve the Productivity of the development team and to make the testing process time and Cost effective.
2. To make the final Software with fewer defects and to eliminate the inadequacies.

11. Define Software Engineering.

Software Engineering is defined as a process of analyzing user requirements and then designing, building and testing Software application which will Satisfy those requirements.

12. List the Process maturity levels in SEI's CMMI.

A maturity level is a well-defined evolutionary plateau toward achieving a matured Software Process. Each maturity level provides a layer in the foundation for continuous Process improvement. In CMMI models with a staged representation, there are five maturity levels designated by the numbers 1 through 5.

1. Initial
2. Managed
3. Defined
4. quantitatively managed.
5. optimizing.

13. List the different activities of requirement engineering process.

⇒ Requirement engineering refers to the process of defining, documenting and maintaining.

requirements in the Engineering design Process.

⇒ Requirement engineering provides the appropriate mechanism to understand the what the customer desires, analyzing the need, and assessing feasibility Requirement engineering Process:

1. Feasibility Study
2. Requirement elicitation and Analysis
3. Software Requirements Specification.
4. Software Requirement Validation.
5. Software Requirement Management.

14. Define data dictionary.

A data dictionary is a file or a set of files that includes a database metadata. The data dictionary hold records about other objects in the database, such as data ownership, data relationships to other objects, and other data.

15. Define Sequence Diagram.

In Software engineering a System Sequence diagram is a Sequence diagram that shows for a particular scenario of a use case, the events that external actors

generate their order and possible inter System events.

A Sequence diagram should specify the following:-

1. External actors.
2. Message invoked by these actors.
3. Return values associated with previous messages.
4. Indication of any loops or iteration area

16. List the three golden rules in UID.

user interface is the front-end application view to which user interacts in order to use the Software. The Software becomes more popular if it is user interface is:

1. Attractive.
2. Responsive in short time.
3. Simple to use
4. Clear to understand.
5. Consistent on all interface screens.

Golden rules:- the following are the golden rules stated by theo Mandel that must be followed by during the design of the interface.

1. place the user in control.

2. Reduce the user's memory load.
3. Make the interface Consistent.

17. Distinguish between Alpha & beta testing.

⇒ Alpha testing is a type of Software testing performed to identify bugs before realising the product to real users or to the Public. Alpha testing is one of the user acceptance testing.

⇒ Beta testing is performed by real users of the Software application in a real environment. Beta testing is one of the type of user Acceptance testing

The difference between Alpha & beta testing is as follows:-

Alpha testing	Beta testing
⇒ Alpha testing involves both the white and black box testing	⇒ Beta testing commonly uses black box testing.
⇒ Alpha testing is performed at developers site.	⇒ Beta testing is performed at end-user of the Product.

⇒ Realiability and Security testing are not checked in alpha testing.	⇒ Reliability, Security and Robustness are checked during beta testing.

18. Define Software metrics.

A Software metric is a measure of Software characteristics which are measurable or countable. Software metrics are valuable for many reasons including measuring Software performance, planning, work items measuring Productivity and many other usess.

19. what is meant by Proactive and reactive risk?

Proactive risk:- Proactive risk management consists of focusing on mitigating the risks of threat events before these might possibly occur and negatively impact the organization.

Reactive risk:- Reactive risk management Consists of responding to risk events as they occur to mitigate negative impacts to the organization.

20. Define Six Sigma.

Six Sigma is the process of improving the quality of the output by identifying and eliminating the cause of defects and reduce variability in manufacturing and business processes.

Characteristics of six sigma:-

1. Statistical quality control.
2. Methodical Approach.
3. Fact and data based Approach.
4. Project and objective Based focus
5. Customer focus.
6. Teamwork Approach to quality Management.