**UNIT I SOFTWARE PRODUCT AND PROCESS**

1. What is software engineering?

The Application of systematic, disciplined, quantifier approach, to the development, operations, and maintenance of software

2. What is Software?

Software is nothing but a collection of computer programs that are related

documents that are indented to provide desired features, functionalities and better performance.

3. What are the characteristics of the software?

\* Software is engineered, not manufactured.

\* Software does not wear out.

\* Most software is custom built rather than being assembled from components.

4. What are the various categories of software?

\* System software

\* Application software

\* Engineering/Scientific software

\* Embedded software

5. What are the challenges in software?

\* Copying with legacy systems.

\* Heterogeneity challenge

\* Delivery times challenge.

6. Define software process.

Software process is defined as the structured set of activities that are

required to develop the software system.

7. What are the fundamental activities of a software process?

\* Specification

\* Design and implementation

\* Validation

\* Evolution

8. What are the umbrella activities of a software process?

\* Software project tracking and control.

\* Risk management.

\* Software Quality Assurance.

\* Formal Technical Reviews.

\* Software Configuration Management.

\* Work product preparation and production.

\* Reusability management.

\* Measurement.

9. What are the merits of incremental model?

i) The incremental model can be adopted when there is less number of

people involved in the project.

ii) Technical risks can be managed with each increment.

iii) For a very small time span, at least core product can be delivered to the

customer.

10. List the task regions in the Spiral model.

\* Customer communication - it is suggested to establish customer

communication.

\* Planning – All planning activities are carried out

\* Risk analysis – The tasks required to calculate technical and management

risks.

\* Engineering – tasks required to build one or more representations of

applications

\* Construct and release – tasks required to construct, test, install the

applications

\* Customer evaluation - tasks are performed and implemented at installation

stage based on the customer evaluation.

11. What are the drawbacks of spiral model?

i) It is based on customer communication. If the communication is not

proper then the software product that gets developed will not be the up to the mark.

ii) It demands considerable risk assessment. If the risk assessment is done

properly then only the successful product can be obtained.

12. What is System Engineering?

System Engineering means designing, implementing, deploying and

operating systems which include hardware, software and people.

13. List the process maturity levels in SEIs CMM.

Level 1: Initial - Few processes are defined and individual efforts are taken.

Level 2: Repeatable – To track cost schedule and functionality basic project

management processes are established.

Level 3: Defined – The process is standardized, documented and followed.

Level 4: Managed – Both the software process and product are quantitatively

understood and controlled using detailed measures.

Level 5: Optimizing – Establish mechanisms to plan and implement change.

14. What does Verification represent?

Verification represents the set of activities that are carried out to confirm

that the software correctly implements the specific functionality.

15. What does Validation represent?

Validation represents the set of activities that ensure that the software that

has been built is satisfying the customer requirements.

16. What are the steps followed in testing?

1) Unit testing - The individual components are tested in this type of testing.

2) Module testing – Related collection of independent components are tested.

3) Sub-system testing –Various modules are integrated into a subsystem and the

whole subsystem is tested.

4) System testing – The whole system is tested in this system.

5) Acceptance testing – This type of testing involves testing of the system with

customer data.

17. What is the use of CMM?

Capability Maturity Model is used in assessing how well an organization’s

processes allow to complete and manage new software projects.

18. Name the Evolutionary process Models.

i. Incremental model

ii. Spiral model

iii. WIN-WIN spiral model

iv. Concurrent Development

19. What is meant by Software engineering paradigm?

The development strategy that encompasses the process, methods and tools and generic phases is often referred to as a process model or software engineering paradigm.

20. What are the various elements for computer based system?

1. Software 2. Hardware

3. People 4. Database

5. Documentation 5. Procedures.

21. Define dynamic verification?

Dynamic verification is performed during the execution of software and

dynamically checks its behavior.

24. Define static verification?

Static verification is a process to check some requirements of software

doing a physical inspection of it. Example: software metric calculation.

25. What is a Process Framework?

Process Framework :

* Establishes foundation for a complete software process
* By identifying a small number of framework

activities that are applicable for all software projects regardless of their size and complexity

26. What are the Generic Framework Activities? Generic Framework Activities :

* + Communication
  + Planning
  + Modeling
  + Construction
  + Deployment

1. Define Stakeholder. Stakeholder :
   * Anyone who has stake in successful outcome of Project
   * Business Managers, end-users, software engineer, support people
2. How the Process Model differ from one another?

* Based on flow of activities
* Interdependencies between activities
* Manner of Quality Assurance
* Manner of Project Tracking
  + Team Organization and Roles
  + Work Products identify an requirement identifier