CS615 – Software Project Management
Short – Question Answers

List down the tasks of Initializing process (2)
Requirement gathering:
Scope determination:
Resource allocation
Creating an initial project plan

What is prototype (2)
A prototype is a model of a product which is used for testing before a manufacturing run is ordered

When a software engineer is provided incorrect, incomplete requirements, which areas are affected most (3)

Most software development projects are overwhelmed by requirements from stakeholders of the project. The deluge of requirements may make it seem impossible that any requirements that are critical to the success of project could be missed, but it is possible to miss them! Remember that requirements will differ from Scope Statement, or SOW, in that they are the details of how the goals and objectives will be built.

Name any six planning process tasks (3)
Planning Process Tasks
1. Scope Planning
2. Scope Definition
3. Activity Definition
4. Activity Sequencing
5. Activity Duration Estimating
6. Resource Planning
7. Cost Estimating
8. Cost Budgeting Risk Planning
9. Schedule Development
10. Quality Planning
11. Communications Planning
12. Organization Planning
13. Staff Acquisition
14. Procurement Planning
15. Project Plan Development

Describe Formal change process in detail (5)
A request for change triggers that change control procedure. Then request is logged in the change request register. Next, the change request number is recorded in the change request evaluation plan. The request is evaluated and analyzed to check if the change is valid. Example I'd like to be able to incorporate a formal change control procedure using my company forms. The process would allow

employees/users to submit a change request, document the request, and notify the appropriate employees/users. Could also add a task to review/approve the request. This process could be added to the projects section, and show up on the dashboard notifying the reviewer/approving of the submitted request.

Discuss technology related problems in a software project (5)

You may also encounter technology-related problems in a software project. These include:

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Overestimated savings from reusable components and new tools and methods: You can reuse software components in a software project to save time, effort, and cost of creating the component again. It is important that you assess the savings that the use of such a software component provides to a software project. This expectation of both the customer and the management might not be met, if you overestimate the savings from reusing software components.

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Switching tools in mid way: The current technology environment offers new tools and technologies for software development at a fast rate. All these tools and technologies offer the benefits of a shorter development cycle, lower costs, and under better functionality than earlier tools. You should identify and commit to the tool and technology for the software project before the project commences. Switching the tool or technology used during the software development stage causes the developers to relearn a new tool. In addition there is a chance that it might not be possible to integrate the software already developed with the new tool.

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Integrating different software products in cross-platform implementation: The modem software environment requires that all software should integrate with each other. However, many software projects do not plan for integration with existing software in the same or different domain. This limits the applicationofsu9h software and reduces the shelf life drastically. They key to the success of a software product is interoperability. The software project manager needs to determine the scope for the software product such that is can be integrated easily with existing software

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Elaborate the problem in project money fuzzy users which is product related (2)
Fuzzy users: *it is product related problem* You also need to clarify the background characteristics of the users of the final software product at the beginning of the software project. If the description of the users is fuzzy, then the software analysis, design, and development stages may reflect the ambiguity with regard to the functions and performance of the final software product.

2) list the inputs of initiating process (2)
Initiating Process
⇒ **Inputs**
• Product Description
• Strategic Plan
• Selection Criteria
• Historical Information

3) what are the people related problem on software project management
• Low motivation
• Problem employees
• Unproductive work environment
• Inefficient project management style
• Lack of stakeholder interest
• Ineffective project sponsorship by management

Explain the process of controlling versions (3)
Controlling Versions

Version control combines procedures and tools to manage different versions of configuration objects that are created during software product development. To control versions, you can use Version Control Register. In Version Control Register, you enter the details of components, such as component identification numbers, their versions, and dates of validity. It is advisable to release a baseline after a version is released. Baseline is a specification or a product that is formally reviewed and agreed upon. This serves as the basis for further development. Baseline can be changed only through formal change control procedures. A baseline consists of a set of SCIs that are logically related to each other. Baselines are established when subsequent changes to the SCIs need to be controlled. Version control is essential so that everybody uses only the latest version. Any kind of version mismatch might result in rework.

Differentiate between the bibliography and appendix (5)

– ***The bibliography*** contains references to all documents that relate to the software. These include other software engineering documentation, technical references, vendor literature, and; standards.

– ***The appendix*** contains information that supplements the specifications. Tabular data, detailed description of algorithms, charts, graphs and other material, are presented as appendixes.

Elaborate the concept of product operation factors and explain all product operation factors? (5)

1. Product Operation Factors

The product operation factors determine the quality of software when a program is executed. Good quality software is not only correct and reliable but also delivers correct performance in all circumstances. Some of the factors of product operation are correctness, reliability, efficiency, integrity, and usability. You can look at the factor description in Table 1.

***Table* 1:** Product Operation Factors

Correctness Accuracy of the program and the extent to which it fulfills design specifications

Reliability Extent to which the program is secure and its ability to recover quickly from failure.

Efficiency Performance of the program and its ability to perform tasks within a time frame

Integrity Ability of the program to take care of security and the extent to which it can prevent
unauthorized.

Usability Ease with which a user can learn, operates, and uses the program.

list the features of WBS? (2)
First, it gives the management an idea about the size and complexity of the project.

1.

Explain ESTIMATION?

2 Marks In a software project, unless you are sure that your estimation is accurate, you cannot make much progress. Estimation of factors such as cost, effort, risks, and resources is crucial. It gives you a fair idea of the size of the project. You can use the information about size to estimate the cost, effort, and duration of the project. This further helps plan for resources and schedule the project.

2.

Explain WBS?

2 Marks Work breakdown structure (WBS) is a technique to decompose the project for the purpose of management and control. It provides the framework for organizing and managing the work. It gives the management an idea about the size and complexity of the project. It helps in planning, scheduling, and monitoring a project realistically.

3.

Explain Quality Control

2 Marks Quality control involves the series of inspections, reviews, and tests used throughout the software process to ensure each work product meets the requirements placed upon it. Quality control includes a feedback loop to the process that created the work product. Quality control activities may be fully automated, entirely manual, or a combination of automated tools and human interaction.

4.

Risk and management

2 Marks Riskconcerns the deviation of one or more results of one or more future events from their expected value. The value of those results may be positive or negative. Risk management is the systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives.

5.

What is COCOMO?

3 Marks The COCOMO technique is another popular estimation technique. Dr: Barry Boehm propounded this technique in 1981. COCOMO uses cost driver attributes to calculate the effort and duration of a project. The COCOMO technique has three levels of implementation. With each level, the complexity of the model increases. The levels of the COCOMO technique are: i. Basic: estimates the effort and cost of a software project by using only the lines of code. ii. Intermediate: involves an additional step of calculating the effort adjustment factor (EAF). iii. Advanced: uses the steps of the intermediate COCOMO technique. In addition, it uses costs driver attributes assigned to each phase of the SDLC such as analysis and design.

6.

Explain SLOC?

3 Marks It is defined as the source lines of code that are delivered as part of the product. The effort spent on creating the source lines of code is expressed in relation to thousand lines of code (KLOC). The SLOC technique is an objective method of estimating the size because there are no multiple ways of calculating the lines of code. Therefore, the effort estimate is close to being accurate. The SLOC technique is also used to directly calculate the effort to be spent on a project.

7.

Explain Project Scheduling?

3 Marks Software project have a tendency to get out of control because of the multiple activities that need to be monitored, tracked, and controlled.
Software project scheduling
is an activity that distributes estimated effort across the planned project duration by allocating the effort to specific software engineering tasks.

8.

RISK REFINEMENT?

3Marks During early stages of project planning, a risk may be stated quite generally. As time passes and more is learned about the project and the risk, it may be possible to refine the risk into a set of more detailed risks, each somewhat easier to mitigate, monitor, and manage. One way to do this is to represent the risk in condition-transition-consequence.

9.

What is Quality Assurance explain

5Marks SQA is the process of evaluating the quality of a product and enforcing adherence to software product standards and procedures. It is an umbrella activity that ensures conformance to standards and procedures throughout the SDLC of a software product. There are a large number of tasks involved in SQA activities. These include: i. Formulating a quality management plan ii. Applying software engineering techniques iii. Conducting formal technical reviews iv. Applying a multi-tiered testing strategy v. Enforcing process adherence vi. Controlling change vii. Measuring impact of change viii. Performing SQA audits ix. Keeping records and reporting

10.

what is RISK PROJECTION

5Marks Risk projection, also called risk estimation, attempts to rate each risk in two ways-the likelihood or probability that the risk is real and the consequences of the problems associated with the risk, should it occur. The project planner, along with other managers and technical staff, performs four risk projection activities: (1) Establish a scale that reflects the perceived likelihood of a risk, (2) delineate the consequences of the risk, (3) Estimate the impact of the risk on the project and the product, and (4) Note the overall accuracy of the risk projection so that there will be no misunderstandings.

11.

WBS, what it contains?

2marks Maps all contractual obligations (SOW) regarding deliverables Details project objectives Detailed enough to meet performance (measurable) objectives Contains built‐in WBS and Project Plan review and update

12.

high level WBS goals

2marks This isnot an exhaustive list of all project development tasks, and not all projects will require all the tasks described. However, this table will be useful as a checklist to assist in locating tasks that may have been overlooked.

13.

what is progress line

2marks To track a project plan, you first view the progress of a project. You can view the progress of a project by applying progress lines to the tasks in the project. You can

display progress lines in three ways, at the current status of a project, on selected dates of a project plan and at regular intervals such as daily, weekly, or monthly.

14.

what is software process

2marks When you build a product or system, it's important to go through a series of predictable steps – a road map that helps you create a timely, high-quality result, The road map that you follow is called a'software process'.

15.

Types of risk

3Marks There are two types of risks: **Development Process Risks** The risks encountered during product development are categorized as development process risks. These comprise developer errors, natural disasters, disgruntled employees, and poor management objectives. **Product Risks** Product risks crop up in the form of changing requirements during product development. Incomplete and unclear requirements are a risk to the product during development. Similarly, problems in meeting design specifications can also be categorized as risk to product development.

16.

Develop sample risk table

3Marks A risk table provides a project manager with a simple technique for risk projection. Risks Category Probability Impact RMMM Impact values: l- Catastrophic 2- Critical 3- marginal 4- Negligible PS implies a project size risk, BU implies a business risk. The column labeled RMMM contains a pointer into Risk Mitigation, Monitoring and Management Plan or alternatively.

17.

What is meant by project uniqueness?

3Marks Projects are always unique; there are never 2 projects that are exactly the same. Uniqueness can be defined in the following terms:
- Start Date and End Date
- Objectives
- Goals

Again, there are never 2 projects that are exactly the same, otherwise, Project Management can be something done by anyone.

In your opinion what are the essential Project Manager skills to execute a Software project timely and in cost-effective way meeting the specifications and quality standards. Briefly discuss two of them. (5)

Planning- deciding what is to be done
 Organizing- making arrangements
 Staffing- selecting the right people for the job
 Directing- giving instructions
 Monitoring- checking on progress
 Controlling- taking action to remedy hold-ups
 Innovating- coming up with new solutions
 Representing- liaising with users, etc.

Four dimensions of a software project. (5)

Four Project Dimensions
Software project management is an umbrella activity within software engineering. It begins before any technical activity is initiated and continues throughout the definition, development, and support of computer software. Four P's have a substantial influence on software project management- people, product, process, and project.

- **People** must be organized into **effective teams**, motivated to do high-quality software work, and coordinated to achieve effective communication.
- **The product requirements must be communicated from customer to developer,** partitioned (decomposed) into their constituent parts, and positioned for work by the software team.

- The **process** must be adapted to the people and the problem. A common process framework is selected, an appropriate software engineering paradigm is applied, and a set of work tasks is chosen to get the job done.

- **T**he **project** must be organized in a manner that enables the software team to succeed.

Effective software project management focuses on the four P's: people, product, process, and project. The order is not arbitrary. The manager who forgets that software engineering work is an intensely human endeavor will never have Success in project management. A manager who fails to encourage comprehensive customer communication early in the evolution of a project risks building an elegant solution for the wrong problem. The manager who pays little attention to the process runs the risk of inserting competent technical methods and tools into a vacuum. The manager who embarks without a solid project plan jeopardizes the success of the product.
⇒ **People**
In a study published by the IEEE, the engineering vice presidents of three

major technology companies were asked the most important contributor to a successful software project. They answered in the following way:
VP 1: I guess if you had to pick one thing out that is most important in our environment. I'd say it's not the tools that we use, it's the people.
VP 2: The most important ingredient that was successful on this project was having smart people…very little else matters in my opinion....The most important thing you do for a project is selecting the staff...The success of the software development organization is very, very much associated with the ability to recruit good people.
VP 3: The only rule I have in management is to ensure I have good people – real good people-and that I grow good people – and that I provide an environment in which good people can produce.
Indeed, this is a compelling testimonial on the importance of people in the software engineering process. And yet, all of us, from senior engineering vice presidents to the lowliest practitioner, often take people for granted. Managers argue (as the preceding group had) that people are primary, but their actions sometimes belie their words. In this section we examine the players who participate in the software process and the manner in which they are organized to perform effective software engineering.

1. The Players

The software process (and every software project) is populated by players who can be categorized into one of five constituencies:
1. Senior managers who define the business issues that often have significant influence on the project.
2. Project (technical) managers who must plan, motivate, organize, and control the practitioners who do software work.
3. Practitioners who deliver the technical skills that are necessary to engineer a product or application.
4. Customers who specify the requirements for the software to be engineered and other stakeholders who have a peripheral interest in the outcome.

Waterfall model and its disadvantage if any. (5)

The Waterfall model: This is the traditional life cycle model. It assumes that all phases in a software project are carried out sequentially and that each phase is completed before the next is taken up.
Disadvantages :

- Time Consuming
- Cost
- Error description

Write an outline of Software Requirements Specification document. In detail.

The Software Requirements Specification is produced at the culmination of the analysis task, The function and performance allocated to software as part of

system engineering are refined by establishing a complete information description, a detailed functional description, a representation of system behavior, an indication of performance requirements and design constraints, appropriate validation criteria, and other: information pertinent to requirements. The National Bureau of Standards; IEEE (Standard No. 830-1984), and the U.S. Department of Defense have all proposed candidate formats for software requirements specifications (as well as other software engineering documentation).
Mode of specification has a great impact on quality of solution. Forcing SWE to work with incomplete, inconsistence, or misleading specifications result in frustration and confusion affecting:
– **Quality**
– **Timeliness and**
– **Completeness of SW product**

Outline of Software Requirement Specification SRS
Separate functionality from implementation.
ii. Develop a model of desired behavior of a system that encompasses data and the functional response of a system to various stimuli from the environment.
iii. Establish the context in which SW operates by specifying the manner in which other system components interact with software.
iv. Define the environment in which system operates and indicate how a highly inter-wined collection of agents react to stimuli in the environment (changes to objects) produced by those agents.
v. Create a cognitive model rather than a design or implementation model. Cognitive model describes a system as perceived by its user community.
vi. Recognize that; "the specifications must be tolerant of incompleteness and augmentable."
vii. A specification is always a model –an abstraction-of some real (or envisioned) situation that is normally quite complex. Hence it will be incomplete and will exit at many levels of detail.
i. Establish the content and structure of a specification in a way that will enable it to be amenable to change.

Differentiate between Baseline Version and Interim Version. Give at least three differences.

Baselines vs. Interim Versions
SCM differentiates between baselines and interim versions. A baseline is a tested and certified version of a system. Baselines can be assigned version numbers such as 1.0, 2.0, 3.0, and so on. A baseline usually undergoes intensive testing. Interim versions, on the other hand, have version numbers, such as 1.1 or 1.2. The interim version is a temporary version. Interim versions have a short life and survive only during bug fixing, testing, or debugging. However, interim versions also have a unique version number or name. Baselines are more visible with the marketing team and the vendors than the interim versions. However, as part of SCM, all versions of changes are saved, clearly labeled,

and archived. Archiving is the process of maintaining controlled copies of prior versions. Archiving helps in recreating earlier versions in the event of data loss or data corruption.

Explain why the waterfall model of the software process is not an accurate reflection of the detailed software processes in most organizations. Why is a spiral model more realistic? (5)

⇒ **The Spiral model**, described by Boehm (1988), is another development method that iterates between the requirements, design and implementation phases. However, the Spiral model continues iterating until the final system is complete. Within each, iteration, the Spiral model follows a phased approach similar to the Waterfall model.

Different models maybe suitable for different software projects or for different software development organizations However, a good model must include certain fundamental features. Some of these basic requirements are discussed in IEEE Standard (IEEE 1993) Standard for Software Life Cycle Processes. This standard describes the processes that are mandatory for the development of software and specifies the activities that must be included in the life cycle model.
Most modern software development models, and certainly those following IEEE Standard 1074, include some form of the basic phased model. It is therefore important to understand the different phases and how they relate to one another.

Giving reasons for your answer based on the type of system being developed, suggest the most appropriate software process model which might be used as a basis for managing the development of the following *system:* (9)

i. Certified Carriers is a courier company that has decided to automate its billing, customer service, and inventory systems due to an increase in their sales volume and customer strength.

- The company has no experience in automation because this is for the first time that they are planning for automating their basic services.
- The client too has no idea about the size, cost, and the duration of the project.
- They have assigned the automation project to Technology Systems.
- Technology Systems needs to analyze the systems of Certified Carriers and present a prospective: working model of the software product.
- Only after the working model is approved and signed-off by Certified Carrier, will the team draw up a specific project plan and create a development team.
- However, an analysis team is formed to create the working model, arrange meetings with the client, accept feedback, and implement all practicable feedback to the working model.

- The team at Technology Systems intends to reuse the technology and the working model to further develop and complete the creation of the software product.

If you are given a Software Project to manage, what steps you will consider for planning of the project.

Basically, the management involves the following activities:
 Planning- deciding what is to be done
 Organizing- making arrangements
 Staffing- selecting the right people for the job
 Directing- giving instructions
 Monitoring- checking on progress
 Controlling- taking action to remedy hold-ups
 Innovating- coming up with new solutions
 Representing- liaising with users, etc.

Explain the following terms regarding project characteristics and project dimensions.

· **Temporary,**

1. Temporary

Temporary means that every project has a definite beginning and a definite end. The end is reached when the project's objectives have been achieved, or it becomes clear that the project objectives will not or cannot be met, or the need for the project no longer exists and the project is terminated. Temporary does not necessarily mean short in duration; many projects last for several years. In every case, however, the duration of a project is finite; projects are not ongoing efforts.

2. Unique, Product Service or Result

Projects involve creating something that has not been done in exactly the same way before and which is, therefore, *unique* and distinct. Projects create:

• A product or artifact that is produced, is quantifiable and can be either an end item in itself or a component item

• A capability to perform a service, such as business functions supporting production or distribution

• A result, such as new knowledge. For example, a research and development project develops knowledge that can be used to determine whether or not a trend is present or a new process will benefit society.

The presence of repetitive elements does not change the fundamental uniqueness of the project work. For example:

• A project to develop a new commercial airliner may require multiple proto-types.

• A project to bring a new drug to market may require thousands of doses of the drug to support clinical trials.

• A real estate development project may include hundreds of individual units.

• A development project (e.g., water and sanitation) may be implemented in five geographic areas.

3. Aims/Tasks/Purpose

The projects are designed to achieve specific targets defined in terms of aims, tasks or a purpose. The nature and size of the project depends upon complexity of the task, realization of the aims and scope of the purpose any organization wants to achieve. In short project has to be aimed for achieving certain tasks in a given time frame.

People must be organized into **effective teams**, motivated to do high-quality software work, and coordinated to achieve effective communication.

the processes such as: initiating, planning,
executing, controlling, and closing. It is important to note that many of the processes within project management are iterative in nature. This is in part due to the existence of and the necessity for progressive elaboration in a project throughout the project life cycle; i.e., the more you know about your project, the better you are able to manage it.

Write down the software process player's names and their roles in projects.

The Players

The software process (and every software project) is populated by players who can be categorized into one of five constituencies:

1. Senior managers who define the business issues that often have significant influence on the project.

2. Project (technical) managers who must plan, motivate, organize, and control the practitioners who do software work.

3. Practitioners who deliver the technical skills that are necessary to engineer a product or application.

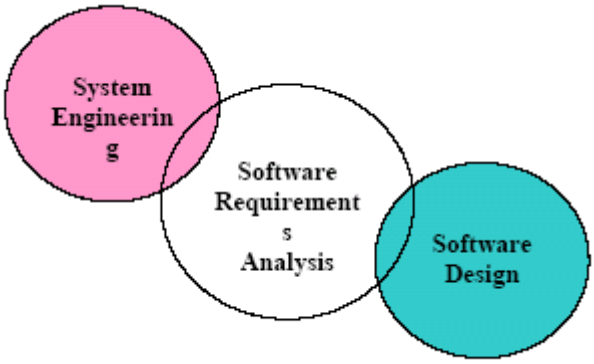
4. Customers who specify the requirements for the software to be engineered and other stakeholders who have a peripheral interest in the outcome.

5. End-users

Software requirements analysis a bridge between system engineering and software design, show it by diagram.

Answer:-

A bridge between system engineering and software design



Give the name of configuration control tools?

Configuration control tools, including:
 Automatic version control and
 Change control tools
 Monitoring, auditing and registration support utilities
 Storage facilities; a safe repository for all approved configuration items, including:
– On-site storage for the day to day development process
– Off-site storage for catastrophe recovery

What are the tasks that you perform in project closedown ? (2)

The final activity for a project manager is project closedown. For most software projects, the project closedown activities take place in the post-implementation phase. However, in some software projects, the customer requests support activities for a longer duration. In such cases, the software project is considered closed immediately after implementation. The tasks that you perform in project closedown are mentioned below:

• ***Prepare closedown report***: The project closedown report contains the results of the causal analysis that you do for the project. This contains an analysis of what went wrong, what went right, and what you could have done better in the software project.

• ***Identify learning:*** You also need to assess the entire software project and the results of the causal analysis to identify the key learning points from the software project. This helps you identify areas of improvement for future projects. The learning points can also be used by the organization as considerations while planning and executing the next software project.

• ***Identify reusable software components:*** Reusing software components enables you to lower the cost, time, and effort required to complete the software project successfully. After project closedown, you identify the software components that can be reused in future projects of similar nature. The software components prepared for a software project may be complete, partially complete, or in the design stage. These components or their designs can be assessed for usability in future projects.

• ***Create reference material:*** After the project is complete, you can create white papers and reference documents. This can be a significant contribution to the organization and the application area of the software by creating an authoritative knowledge base.

State any three benefits of weekly status report (2)

The project manager also receives status reports from other project support personnel such as the project systems engineer or the deputy project manager. The project manager then prepares the project status report by combining the individual reports received into a single three-part report. The project status report is then submitted to top management. Project status reports are not necessarily submitted at the same frequency as internal project status reports. Project reports may be submitted bi-weekly or
Monthly

List the features of WBS? (2)

Creating a WBS is a prerequisite for any estimation activity. It enables you to conceptualize an abstract entity, such as a project, into distinct, independent units.

What is the advantage of function point (2)

– Advantages of Using Function Points

Function points are language-and technology-independent. Therefore, you can use them to estimate any kind of project. They can also be used to estimate the effort, cost, and schedules of projects that use the Prototyping and Spiral models because such projects have uncertain user and project requirements.

In addition, you can use function points as a project estimation technique when you anticipate changes in the middle of a project. These changes may disturb the estimates if, you had used SLOC to estimate the effort, cost, or size of a project.

The FP estimation uses a subjective and holistic approach for project estimation. Consequently, the estimates calculated by using the FP are unlikely to be incorrect.

What are the types of risk (2)

Development Process Risk
Product Related Risk

How can material resource rate is calculated? (2)

material resources are used completely by the end of the
project. For example, to complete the task of writing the code for a module, you need human and material resources. You need material resources such as hardware, software, and electricity

Define software process & explain it (3)

When you build a product or system, it's important to go through a series of predictable steps – a road map that helps you create a timely, high-quality result, The road map that you follow is called a 'software ***process'*** .

Software engineers and their managers adapt the process to their needs and then follow it. In addition, the people who have ties defined by the process requested the software play a role in the software process.

It provides stability, control, and organization to an activity that can, if left uncontrolled, become quite chaotic.

At a detailed level, the process that you adopt depends on the software you're building. One process might be appropriate for creating software for an aircraft avionics system, while an entirely different process would be indicated for the creation of a web site.

From the point of view of a software engineer, the work products are the programs, documents and data produces as a consequence of the software engineering activities defined by the process.

A number of software process assessment mechanisms enable organizations to

determine the “maturity” of a software process. However, the quality, timeliness and long-term viability of the product you build are the best indicators of the efficacy of the process that you use.

Write down concept of “time and effort allocation” for project scheduling? (3)
Each activity in a software project needs a certain amount of time and effort for completion. To manage the project, you assign start and end dates to each activity. You also need to allocate appropriate effort to each activity. Most software projects operate with time and effort constraints. Therefore, managing within the available resources is very important for a software project manager.

What are the tasks that you perform in project closedown? (2)
Ans: Prepare closedown report
Identify Learning
Identify reusable software components
Create reference material

State any three benefits of weekly status report (2)
Ans: Activities during the period
Activities planed for next week
Problems.

list the features of WBS? (2)
Ans :
First, it gives the management an idea about the size and complexity of the project.
Second, it helps in planning, scheduling, and monitoring a project realistically.
This is possible because all the tasks in the project can be preformed measurable targets for each task.

What are the advantage of function point (2)
Function points are language-and technology-independent. Therefore, you can use them to estimate any kind of project. They can also be used to estimate the effort, cost, and schedules of projects that use the Prototyping and Spiral models because such projects have uncertain user and project requirements.
In addition, you can use function points as a project estimation technique when you anticipate changes in the middle of a project. These changes may disturb the estimates if, you had used SLOC to estimate the effort, cost, or size of a project.
The FP estimation uses a subjective and holistic approach for project estimation.
Consequently, the estimates calculated by using the FP are unlikely to be incorrect.

what are the types of risk (2)
Ans: A software project encounters two types of risks, development process risks and product- related risks. Some of the development process risks are developer errors, natural disasters, disgruntled employees, and poor management objectives.

Some project related risks are incomplete requirements, unclear project deliverables and objectives, and complexity of the product.

Define software process & explain it (3)
Ans: When you build a product or system, it's important to go through a series of predictable steps – a road map that helps you create a timely, high-quality result, The road map that you follow is called a 'software process'
A software process provides the framework from which a comprehensive plan for software development can be established.

Write down concept of "time and effort allocation" for project scheduling? (3)
Ans: Each activity in a software project needs a certain amount of time and effort for completion. To manage the project, you assign start and end dates to each activity. You also need to allocate appropriate effort to each activity. Most software projects operate with time and effort constraints. Therefore, managing within the available resources is very important for a software project manager

When risk is considered in the context of software engineering what conceptual underpinning are always in evidence (3)
Ans:
– The future is our concern – what risks might cause the software project to go awry?
– Change is our concern -how will changes in customer requirements, development technologies, target computers, and all other entities connected to the project affect timeliness and overall success?
– Last, we must grapple with choices - what methods and tools should we use, how many people should be involved, how much emphasis on quality is "enough"?

What is progress line? How many ways a progress line can be displayed? (3)
To track a project plan, you first view the progress of a project. You can view the progress of a project by applying progress lines to the tasks in the project. You can display progress lines in three ways,

List the project planning key tasks used in planning physics (3)
Ans:
1. Set goal and scope
2. Select lifecycle
3. Set organization team form
4. Start team selection
5. Determine risks
6. Create WBS
7. Identify tasks
8. Estimate size
9. Estimate effort
10. Identify task dependencies
11. Assign resources
12. Schedule work

What are the output that comes from staff acquisition (3)

Ans: i. Project staff assigned. The project is staffed when appropriate people have been reliably assigned to work on it. Staff may be assigned full time, part time, or variably, based on the needs of the project.

ii. Project team directory. A project team directory lists all the project team members and other stakeholders. The directory may be formal or informal, highly detailed or broadly framed, based on the needs of the project.

Why we use WBS?(5)

Ans: Using a WBS provides a number of benefits to the management and to the development teams.

First, it gives the management an idea about the size and complexity of the project.

Second, it helps in planning, scheduling, and monitoring a project realistically.

This is possible because all the tasks in the project can be preformed measurable targets for each task.

Difference between reactive & proactive risk management (5)

Ans: Reactive strategies have been laughingly called the "Indiana Jones School of risk management" [THO92]. In the movies that carried his name, Indiana Jones, when faced with overwhelming difficulty, would invariably say, "Don't worry, I'll think of something!" Never worrying about problems until they happened, Indy would react in some heroic way.

Sadly, the average software project manager is not Indiana Jones and the members of the software project team are not his trusty sidekicks. Yet, the majority of software teams rely solely on reactive risk strategies. At best, a reactive strategy monitors the project for likely risks. Resources are set aside to deal with them, should they become actual problems. More commonly, the software team does nothing about risks until something goes wrong. Then, the team flies into action in an attempt to correct the problem rapidly. This is often called a fire fighting mode. When this fails, "Crisis Management" [CHA92] takes over, and the project is in real jeopardy.

A considerably more intelligent strategy for risk management is to be proactive. A proactive strategy begins long before technical work is initiated. Potential risks are identified, their probability and impact are assessed and they are ranked by importance. Then, the software team establishes a plan for managing risk. The primary objective is to avoid risk, but because not all risks can be avoided, the team works to develop a contingency plan that will enable it to respond in a controlled and effective manner.

List down the tasks of Initializing process (2)

- Product Description
- Strategic Plan
- Selection Criteria
- Historical Information

What is prototype (2)

A **prototype** is an early sample or model built to test a concept or process or to act as a thing to be replicated or learned from.

When a software engineer is provided incorrect, incomplete requirements, which areas are affected most (3)

Name any six planning process tasks (3)

⇒ Planning Process Tasks

1. Scope Planning
2. Scope Definition
3. Activity Definition
4. Activity Sequencing
5. Activity Duration Estimating
6. Resource Planning
7. Cost Estimating
8. Cost Budgeting Risk Planning
9. Schedule Development
10. Quality Planning
11. Communications Planning
12. Organization Planning
13. Staff Acquisition
14. Procurement Planning
15. Project Plan Developmen

Describe Formal change process in detail (5)

A request for change triggers that change control procedure. Then request is logged in the change request register. Next, the change request number is recorded in the change request evaluation plan. The request is evaluated and analyzed to check if the change is valid. Change request is also evaluated in terms of the number of items affected and the effort involved in effecting the change. Finally, the possible outcome of the change request is communicated.

The request for change is rejected, deferred, or approved. If the request for change is rejected, the requestor needs to log a fresh request. A deferred change request is evaluated at a later date while the change request that is approved is implemented.

There are tools that provide facilities to check in and check out so that the same version of the object is not updated more than once. The check-in and checkout facilities provide synchronization control. Synchronization control helps to ensure that parallel changes performed by two different people do not overwrite one another.

Discuss technology related problems in a software project (5)

⇒ **Technology-related problems**

You may also encounter technology-related problems in a software project. These include:

• ***Overestimated savings from reusable components and new tools and methods:*** You can reuse software components in a software project to save time, effort, and cost of creating the component again. It is important that you assess the savings that the use of such a software component provides to a software project. This expectation of both the

customer and the management might not be met, if you overestimate the savings from reusing software components.

• ***Switching tools in mid way:*** The current technology environment offers new tools and technologies for software development at a fast rate. All these tools and technologies offer the benefits of a shorter development cycle, lower costs, and under better functionality than earlier tools. You should identify and commit to the tool and technology for the software project before the project commences. Switching the tool or technology used during the software development stage causes the developers to relearn a new tool. In addition, there is a chance that it might not be possible to integrate the software already developed with the new tool.

• ***Integrating different software products in cross-platform implementation:***
The modem software environment requires that all software should integrate with each other. However, many software projects do not plan for integration with existing software in the same or different domain. This limits the applicationofsu9h software and reduces the shelf life drastically. They key to the success of a software product is interoperability. The software project manager needs to determine the scope for the software product such that is can be integrated easily with existing software.

Explain the following terms regarding project characteristics and project dimensions.
Temporary,
Unique,
Aims,
People,
Process

Temporary
Temporary means that every project has a definite beginning and a definite end. The end is reached when the project's objectives have been achieved, or it becomes clear that the project objectives will not or cannot be met, or the need for the project no longer exists and the project is terminated. Temporary does not necessarily mean short in duration; many projects last for several years. In every case, however, the duration of a project is finite; projects are not ongoing efforts

unique:
Operations and projects differ primarily in that operations are ongoing and repetitive while projects are temporary and unique. A project can thus be defined in terms of its distinctive characteristics—a project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other products or services. For many organizations, projects are a means to respond to those requests that

Aims/Tasks/Purpose
The projects are designed to achieve specific targets defined in terms of aims, tasks or a purpose. The nature and size of the project depends upon complexity of the task,

realization of the aims and scope of the purpose any organization wants to achieve. In short project has to be aimed for achieving certain tasks in a given time frame.

Process:
A software process provides the framework from which a comprehensive plan for software development can be established.

1.

Explain ESTIMATION?

2 Marks In a software project, unless you are sure that your estimation is accurate, you cannot make much progress. Estimation of factors such as cost, effort, risks, and resources is crucial. It gives you a fair idea of the size of the project. You can use the information about size to estimate the cost, effort, and duration of the project. This further helps plan for resources and schedule the project.

2.

Explain WBS?

2 Marks Work breakdown structure (WBS) is a technique to decompose the project for the purpose of management and control. It provides the framework for organizing and managing the work. It gives the management an idea about the size and complexity of the project. It helps in planning, scheduling, and monitoring a project realistically.

3.

Explain Quality Control

2 Marks Quality control involves the series of inspections, reviews, and tests used throughout the software process to ensure each work product meets the requirements placed upon it. Quality control includes a feedback loop to the process that created the work product. Quality control activities may be fully automated, entirely manual, or a combination of automated tools and human interaction.

4.

Risk and management

2 Marks Riskconcerns the deviation of one or more results of one or more future events from their expected value. The value of those results may be positive or negative. Risk management is the systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives.

5.

What is COCOMO?

3 Marks The COCOMO technique is another popular estimation technique. Dr: Barry Boehm propounded this technique in 1981. COCOMO uses cost driver attributes to calculate the effort and duration of a project. The COCOMO technique has three levels of implementation. With each level, the complexity of the model increases. The levels of the COCOMO technique are: i. Basic: estimates the effort and cost of a software project by using only the lines of code. ii. Intermediate: involves an additional step of calculating the effort adjustment factor (EAF). iii. Advanced: uses the steps of the intermediate COCOMO technique. In addition, it uses costs driver attributes assigned to each phase of the SDLC such as analysis and design.

6.

Explain SLOC?

3 Marks It is defined as the source lines of code that are delivered as part of the product. The effort spent on creating the source lines of code is expressed in relation to thousand lines of code (KLOC). The SLOC technique is an objective method of estimating the size because there are no multiple ways of calculating the lines of code. Therefore, the effort estimate is close to being accurate. The SLOC technique is also used to directly calculate the effort to be spent on a project.

7.

Explain Project Scheduling?

3 Marks Software project have a tendency to get out of control because of the multiple activities that need to be monitored, tracked, and controlled.
Software project scheduling
is an activity that distributes estimated effort across the planned project duration by allocating the effort to specific software engineering tasks.

8.

RISK REFINEMENT?

3Marks During early stages of project planning, a risk may be stated quite generally. As time passes and more is learned about the project and the risk, it may be possible to refine the risk into a set of more detailed risks, each somewhat easier to mitigate, monitor, and manage. One way to do this is to represent the risk in condition-transition-consequence.

9.

What is Quality Assurance explain

5Marks SQA is the process of evaluating the quality of a product and enforcing adherence to software product standards and procedures. It is an umbrella activity that ensures conformance to standards and procedures throughout the SDLC of a software product. There are a large number of tasks involved in SQA activities. These include: i. Formulating a quality management plan ii. Applying software engineering techniques iii. Conducting formal technical reviews iv. Applying a multi-tiered testing strategy v. Enforcing process adherence vi. Controlling change vii. Measuring impact of change viii. Performing SQA audits ix. Keeping records and reporting

10.

what is RISK PROJECTION

5Marks Risk projection, also called risk estimation, attempts to rate each risk in two ways-the likelihood or probability that the risk is real and the consequences of the problems associated with the risk, should it occur. The project planner, along with other managers and technical staff, performs four risk projection activities: (1) Establish a scale that reflects the perceived likelihood of a risk, (2) delineate the consequences of the risk, (3) Estimate the impact of the risk on the project and the product, and (4) Note the overall accuracy of the risk projection so that there will be no misunderstandings.

11.

WBS, what it contains?

2marks ·Maps all contractual obligations (SOW) regarding deliverables ·Details project objectives ·Detailed enough to meet performance (measurable) objectives ·Contains built-in WBS and Project Plan review and update

12.

high level WBS goals

2marks ·This is not an exhaustive list of all project development tasks, and not all projects will require all the tasks described. ·However, this table will be useful as a checklist to assist in locating tasks that may have been overlooked.

13.

what is progress line 2marks

To track a project plan, you first view the progress of a project. You can view the progress of a project by applying progress lines to the tasks in the project. You can display progress lines in three ways, at the current status of a project, on selected dates of a project plan and at regular intervals such as daily, weekly, or monthly.

14.

what is software process

2marks When you build a product or system, it's important to go through a series of predictable steps – a road map that helps you create a timely, high-quality result, The road map that you follow is called a'software process'.

15.

Types of risk

3Marks There are two types of risks: **Development Process Risks** The risks encountered during product development are categorized as development process risks. These comprise developer errors, natural disasters, disgruntled employees, and poor management objectives. **Product Risks** Product risks crop up in the form of changing requirements during product development. Incomplete and unclear requirements are a risk to the product during development. Similarly, problems in meeting design specifications can also be categorized as risk to product development.

16.

Develop sample risk table

3Marks A risk table provides a project manager with a simple technique for risk projection. Risks Category Probability Impact RMMM Impact values: l- Catastrophic 2- Critical 3- marginal 4- Negligible PS implies a project size risk, BU implies a business risk. The column labeled RMMM contains a pointer into Risk Mitigation, Monitoring and Management Plan or alternatively.

17.

What is meant by project uniqueness?

3Marks Projects are always unique; there are never 2 projects that are exactly the same. Uniqueness can be defined in the following terms:
- Start Date and End Date

- Objectives
- Goals

Again, there are never 2 projects that are exactly the same, otherwise, Project Management can be something done by anyone.