

SEPM

Assignment - 02

a) Differentiate b/w CPM & PERT.

Q:-

PERT

1. PERT stands for Project evaluation & review technique.
2. It is a technique of job management which is used to manage uncertain activities of any project.
3. It is a probability model.
4. Appropriate for high precision time estimation.
5. Non repetitive nature of job.
6. No chance of rushing as there is no certainty of time.

CPM

1. CPM stands for critical path method.
2. It is a technique of project management used to study certain (i.e. time is known) activities of any project.
3. It is a deterministic model.
4. Appropriate for measurable time activities.
5. Repetitive in nature.
6. It is suitable for construction projects.

b) Explain the diff b/w Total slack & free slack.

→ Total Slack:-

- It is the amount of time a task can be delayed without delaying the project overall completion date.
- It is calculated as the difference b/w late finish & early finish of a task.
- If total slack is negative it means the project is behind schedule and needs compression techniques like shortening or fast-tracking.
- If total slack is zero, the task is on the critical path.

- It is the amount of time a task can be delayed without delaying the start of any successor tasks.
- It is useful for identifying tasks that can be postponed without affecting dependent activities.
- If no slack is left, every delay in the task will be immediately affect atleast one successor task by difference.
- Total slack affects the entire project completion whereas free slack only affects immediate successor task.
- A task can have free slack but still have total slack and still have total slacks but not vice versa.
- Free slack is always equal to or less than total slack.

ii.) AON & AOA diagrams +

→ Activity on Node (AON) diagram:

In AON diagrams, activities are represented by nodes (boxes) and dependencies b/w them are shown with arrows.

By characteristics +

- Boxes (rectangles) represent project activities.
- Arrows indicate dependencies b/w activities.
- Used in procedure diagramming method which allows for different types of relationships.
- Finish to start . Start to start . Finish to finish
- start to finish

Advantages :

- Most flexible & widely used.
- can represent lead & lag times effectively.

Activity on Arrow (AOA):

In AOA activities are represented by arrows, while nodes (circles) represent the start & end points of activities.

Key characteristics:

- Arrows represent activities. Nodes represent events.
- Does not finish to start & relationships advantages.
- Clearly shows dependencies & the critical path.
- Simpler for smaller projects.

Q.) Explain risk identification, risk mitigation, PMM plan in detail.

→ Risk identification is the process of recognizing potential risks that could negatively impact a project, system or organization. Key steps include:

- Understanding Project scope
- Brainstorming & Expert consultation
- SWOT analysis
- Checklist based approach
- Statistical data analysis
- Categorising risks:
 - a.) Technical risks
 - b.) Financial risks
 - c.) Operational risks
 - d.) External risks

Risk mitigation also known as risk estimation & risk assessment involves analysing the

identified risks in terms of their likelihood, impact & priority.

This helps in decision making regarding mitigation strategies key aspects include:

- Probability assessment & Estimate the chance of risk occurring.
- Impact analysis :- Determine the severity of consequences if the risk occurs.
- Risk exposure calculation :- $RE = P \times I$.
- Risk Mitigation ; Monitoring & Management (PMM) stands for -
- Risk mitigation :- It is adopted as strategy to prevent risks from causing or reduce their impact. Eg:- Using automated testing to prevent software defects.
- Risk Monitoring :- Continuous tracking of risk initiatives & making signs. Eg:- Monitoring system logs for potential security threats.
- Risk Management :- Developing response plans for different risk scenarios.
Example :- Having a backup API provides it over the primary API fails.

Q) Explain Software Configuration Management.

- 1. Configuration Management is the process of identifying & defining the configuration items in a system, controlling the release and change of these items throughout the system lifecycle, & reporting the status of configuration items.

- 2.) Configuration management is practised in form of activities as part of any software engineering project where several individuals or organizations have to coordinate their activities.
- 3.) While the basic disciplines of configuration management are common to both hardware & software engineering projects, there are some differences in emphasis due to the nature of software products.
- 4.) SCM is a system for managing the evolution of software products, both during the initial stages of development & during all stages of maintenance.
- 5.) A software product encompasses the complete set of computer programs, procedures, and associated documentation of data generated for delivery to end user.
- 6.) All supporting software used in development even though not part of software in the development even though not part of it should also be controlled by SCM.
- 7.) Advantages :
 - i. SCM provides significant benefits to all projects regardless of size, scope and complexity.
 - ii. Tracks concurrent development of modules as components of overall systems.
 - iv. Organizes all concurrently changing code & associated documents.

Q.) Explain the significance of Gantt chart in project management.

→ A Gantt chart is a visual project management tool that represents the schedule of tasks over time.

Some of the significance of Gantt charts :-

i.) Managing the project timeline :-

Provides a clear picture of the project program & structure. Helps stakeholders quickly understand deadlines, dependencies & bottlenecks.

ii.) Task scheduling & deadlines :-

iii.) Managing Task Dependencies :-

Identifies which task rely on others, preventing delays in sequential tasks. Helps in adjusting schedules when dependencies shift.

iv.) Tracking progress in Real-time :-

Project managers can monitor completed, ongoing & pending tasks.

v.) Improving team collaboration :-

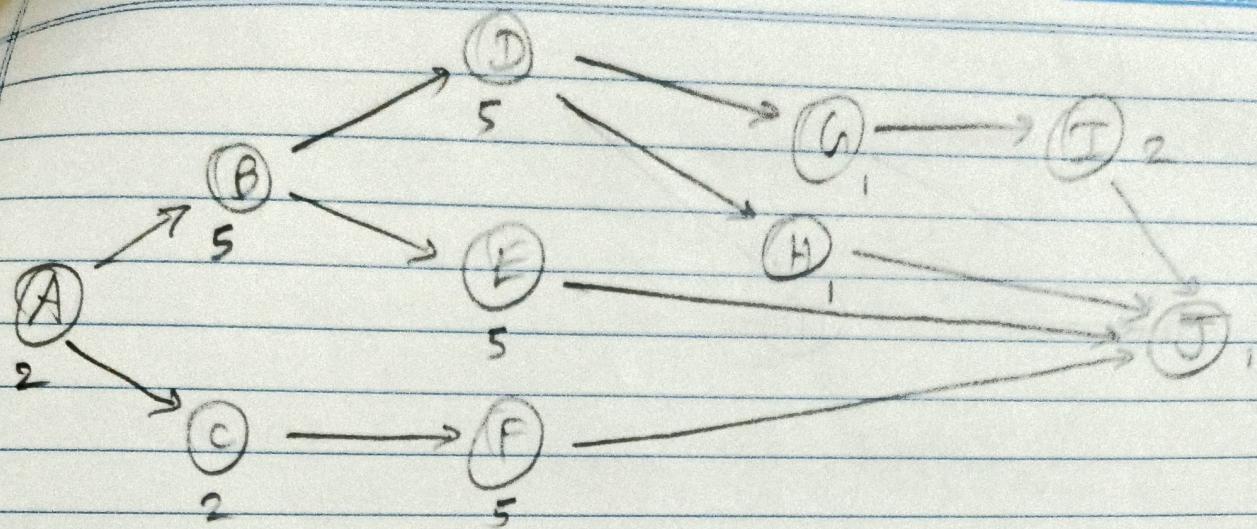
Teams can see who is responsible for which tasks.

Reduces confusion & enhances accounted accountability.

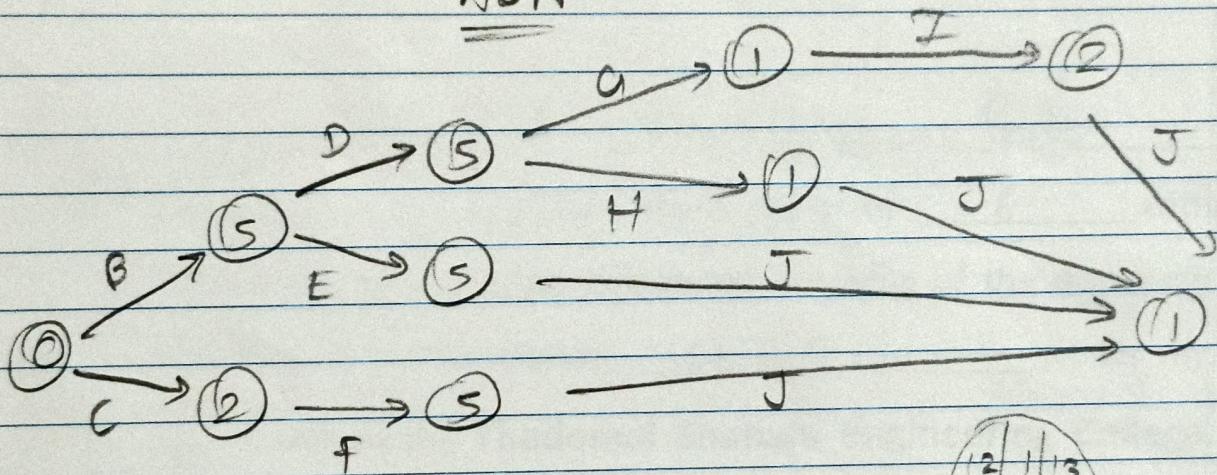
vi.) Risk Identification & Mitigation :-

Highlights potential bottlenecks in the schedule, helps in developing reconfiguring plan for delays.

Q.) Draw the AON & AOA network diagram for the following project & show critical path.



AON



AOA

