

Assignment No. 2

Q/1 Differentiate b/w CPM & PERT

→ PERT

CPM

- 1) PERT stands for Project eval & review technique
- 1) CPM stands for critical path Method.
- 2) It is a technique of proj management which is used to manage uncertain activities of any project
- 2) It is a technique of project Management used to only Certain (ie. time is known) activities of any project
- 3) It is a probabilistic Model
- 3) It is a deterministic Model
- 4) Appropriate for high precision time estimates
- 4) Appropriate for reasonable time estimation.
- 5) Non repetition Nature of Job
- 5) Repetitive Nature of Job.
- 6) No chance of crashing
- 6) May crash because if certain as there is no certainty of time bound.

Q/1 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 & needs compression techniques

like crashing or fast-tracking.
→ If total slack is zero, the task is on the critical path.

Free Slack :-

- 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 free slack is zero, any delay in the task will immediately affect at least one successor task.

Key difference :-

- Total slack affects the entire project completion whereas as free slack only affects immediate successor task.
- A task can have free slack but still have total slack but not vice versa.
- Free slack is always equal to or less than total slack.

(ii) AON & AOA Diagrams :-

Activity on Node (AON)

In AON diagrams, activities are represented by nodes (boxes).

↑ dependencies → They are shown with arrows.

Key characteristics :-

- Nodes (rectangles) represent project activities.
- Arrows indicate dependencies between activities.
- Used in precedence diagramming method.
- Which allows for different types of relationships
 - Finish to Start
 - Start to Start
 - Finish to Finish
 - Start to Finish

Advantages

- More 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
- uses only finish to start relationships

Advantages:

- Clearly shows dependencies & critical path
- Simple for smaller projects

Q/

Explain Risk identification, Srok: projection, RUMM 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
- Historical data analysis

Categorizing Risks :-

- a) Technical risks
- b) financial risks
- c) Operational risks
- d) External risks

Risk projection also known as risk estimation or risk assessment involves analysis the identified risks in terms of their likelihood, impact & priority.

Process path :- A → B → C → D → E → F → G → H → I → J.

This helps in decision making regarding mitigation strategies. Key aspects include :-

- Probability assessment :- Estimate the chances of risk occurring.
- Impact analysis :- Determine the severity of consequences if the risk occurs.
- Risk exposure calculation :- $RE = P \times Z$
- Risk Mitigation :- It is defined as strategies to prevent risks from occurring or reduce their impact.

Example :- Using automated testing to prevent software defects.

Risk Monitoring :- Continuous tracking of risk indicates & warning signs. Example :- Monitoring system logs for potential security threats.

Risk Management :- Developing response plans for different risk scenarios. Example :- Having a backup API provider in case the primary API fails.

Explain Software Configuration Management

- 1) Configuration Management is the process of identifying, defining the configuration items in a system, controlling the release & changes of these items throughout the system lifecycle, recording & reporting the status of configuration items & changes requests & verifying the completeness & correctness of configuration items.
- 2) Configuration Management is practiced in form or another 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 emphases 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 & associated documentations & data designated for delivery to end user.
- 6) All supporting software used in development even though not part of the software product, should also be controlled by SCM.:-
 - Advantages of SCM :-
 - i) SCM provides significant benefits to all projects regardless of size, scope & complexity.

- ii) Provides a snapshot of dynamically changing software.
- iii) Tracks concurrent development of modules or components of overall system.
- iv) Organizes all concurrently developing 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. It helps in planning, tracking & managing tasks efficiently ensuring that project stay on schedule.

Some of the significance of gantt chart:-

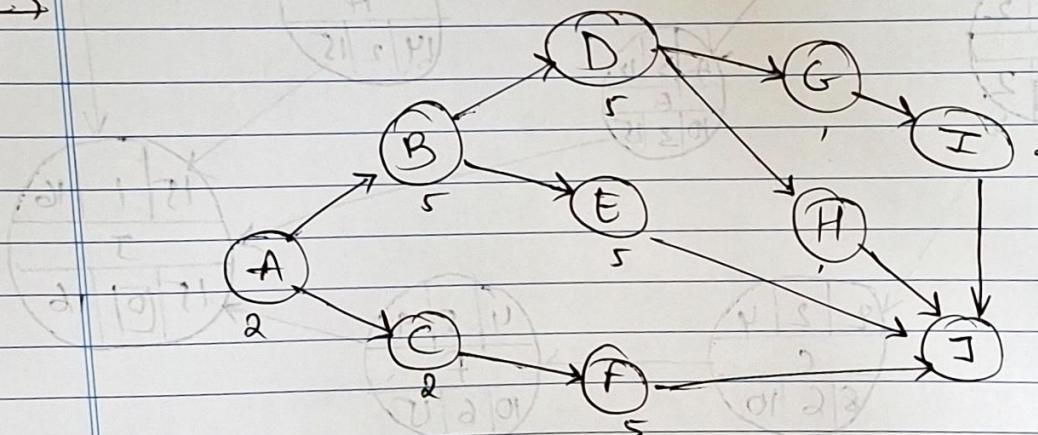
- i) Visualizing the project timeline:-
Provides a clear picture of the project's progress & structure. It helps stakeholders quickly understand deadlines, dependencies & bottlenecks.
- ii) Task scheduling & deadlines:-
Ensures that tasks are completed on time by setting clear & end dates. Helps manage resources effectively & avoid scheduling conflicts.
- iii) Managing Task Dependencies:-
Identifies which task rely on others, preventing delays in sequential tasks. Helps in adjusting schedules when dependencies shift.

vi) Risk Identification & Mitigation

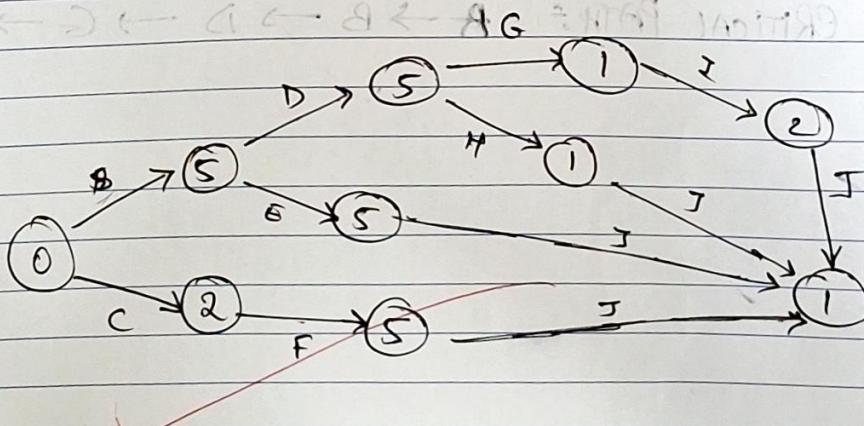
Highlights potential bottlenecks in the schedule.

Helps in developing contingency plan for delays.

Q11 Draw the AON & AOA network diagram for the following project & show critical path.

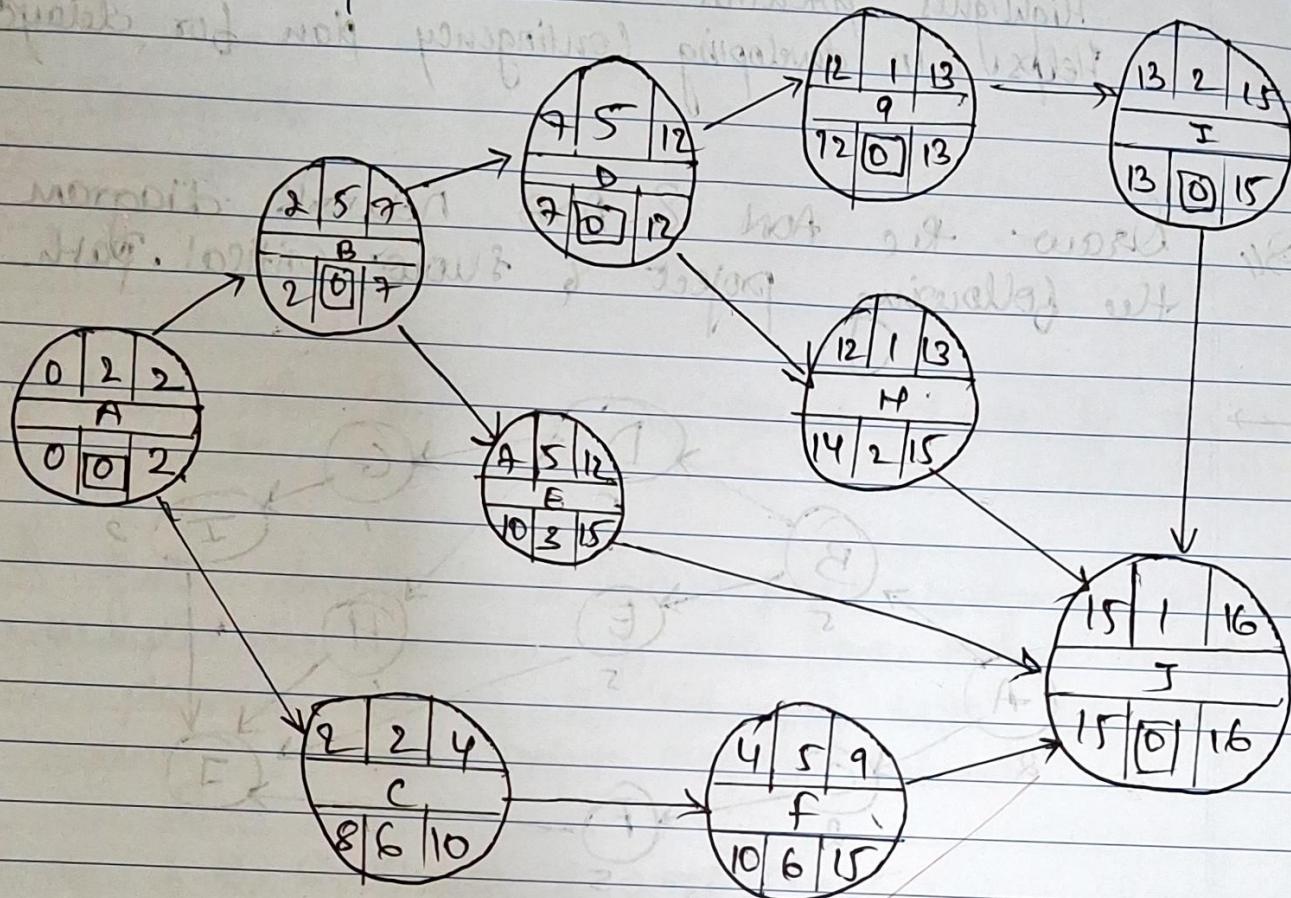


AON



AOA

for Critical Path :-



CRITICAL PATH = A → B → D → G → I → J