

Name :- Satish Shabade.  
Batch :- T21  
Branch :- AEEDS  
Rollno :- 90

## Assignment No :- 2.

(q1) Differentiate between CPM and PERT

CPM

PERT

- | CPM  | PERT   |
|--|--|
| i) Cpm stands for critical path method   | PERT stands for project evaluation and review technique  |
| ii) CPM is a technique of project management which is used to manage only certain activities of any project. | PERT is a technique of project management which is used to manage uncertain activities of any project. |
| iii) It is activity oriented technique which means that network is constructed on the basis of activities.   | It is event oriented technique which means that network is constructed on the basis of event.          |
| iv) It is a deterministic model  | It is probability model.   |
| v) It has repetitive nature of job.  | It has non-repetitive nature of job.   |
| vi) There may be closing because of certain time bound   | There is no chance of crashing as there is no certain time   |

- viii) It is suitable for construction projects  
It is suitable for projects which required research and development.

(Q2) Explain the diff b/w

i) Total Slack and Free Slack:- Both these are concepts in project scheduling and critical path analysis that indicate flexibility available in scheduling activity.

Total Slack

Free Slack

i) The amount of time on activity can be delayed without delaying the project completion date. The amount of time on activity can be delayed without delaying the start of its immediate successor.

ii)  $\text{Total Slack} = \text{late start} - \text{Early start}$ ,  
 $\text{late finish} - \text{Early finish}$ .

$\text{Free Slack} = \text{Earliest start of next activity} - \text{Earliest finish of current activity}$

iii) It is used up it may affect the overall project schedule. It does not affect the project completion date but may impact only one successor task.

- iv) Helps in identifying activities that can be delayed without affecting deadline useful for scheduling flexibility without disturbing that next activity.
- v) Eg. If an activity has a total slack of 5 days it can be delayed by 5 days before it affects the project deadline. If an activity has free slack of 3 days it can be delayed by 3 days without affecting its immediate successor.

(2) AON and AOA Diagrams :- Both AON & AOA are network diagram technique used in project scheduling.

### Activity-on-Node (AON)

i) Activities are represented as nodes and arrows show dependencies.

ii) Can represent all types of dependencies (finish-to-start, start-to-start etc).

iii) No Dummy activities are required

### Activity-on-Arrow (AOA)

Activities are represented as arrow and nodes indicate events (start/end points).

primarily represents finish to start relationships.

Dummy activities are sometimes needed to maintain

Easier to construct and interpret.

More Complex

Used in Precedence diagramming method (PPM)

Used in Arrow Diagramming method (ADM).

(Q3) Explain Risk identification, risk projection, RMM plan in detail

→ (i) Risk identification :- It is the process of recognizing potential risks that may affect the project's success. It involves analyzing internal and external factors that could cause project delays, cost overruns or failure.

Source of Risk :-

- a) Technical Risks :- Incomplete requirement, new technology adoption.
- b) Financial risks :- Budget overspend, finding shortages.
- c) Schedule Risks :- Delayed deliverables, unrealistic deadlines.
- d) Operational risks :- Staff shortages, inadequate resources.
- e) External risks :- regulatory changes, supplier issue.

Technique for risk identification:-

- i) Brainstorming session
- ii) SWOT analysis
- iii) Reviewing past projects
- iv) Expert judgment
- v) Fishbone diagrams.

→ 2) Risk projection :- Risk projection involves assessing the probability and impact of identified risks. This helps prioritize risks based on the severity.

Risk Impact Categories:-

- a) Low impact:- Minimal effect on the project.
- b) Moderate impact:- Can delay project components.
- c) High impact:- Can cause project failure.

Risk Probability Levels:-

- (a) Low (0-30%) :- Unlikely but possible.
- (b) Medium (30-70%) :- Likely to occur.
- (c) High (70-100%) :- Almost certain.

~~Risk assessment method:-~~

- i) Qualitative Analysis
- ii) Quantitative Analysis.
- iii) Risk Matrix

- Q (4) Consider a XYZ Company undertake a project to computerized working of ABC City Bank then
- Develop WBS for some project
  - Develop responsibility matrix.

→ XYZ Company undertake a project as follows:-

(i) Work breakdown structure (WBS) :-  
for computerizing ABC city Bank.

A WBS is a hierarchical decomposition of tasks required to complete a project. It break down the project into manageable ABC City Bank.

Level 1 :- Project :- Computerization of ABC City Bank:-

1) Requirement Analysis & planning :-

- Gather business requirements.
- Identify hardware | software
- Define project scope and objectives
- Risk assessment and feasibility

2) System Design & Architecture:-

- Data base Design
- UI/UX design.
- Define sequence
- Develop system workflow.

## Software Development & Integration :-

- I) Develop core banking software
- II) Integrate with third party
- III) Implement ATM, internet Banking
- IV) Develop reporting and audit modules.

## Hardware & Infrastructure setup :-

- I) Install servers and network infra
- II) Setup branch computer and network infrastructure
- III) Ensure disaster

## Testing & Quality Assurance :-

- I) Perform unit testing
- II) Security testing
- III) Load and performance testing
- IV) fixing bugs & optimising performance

## Training & Deployment :-

- I) Employee training session
- II) Conduct user acceptance testing
- III) Deploy system

## Maintenance :-

- I) Continuous system maintaining
- II) Implement Software update
- III) helpdesk & technical support
- IV) Performance analysis & optimization

Responsibility Matrix: - Matrix for the

A responsibility assignment matrix (RAM) also known as RACI matrix, defines roles and responsibilities of team members for various tasks.

responsibility key:-

- (a) R (Responsible) → perform the task
- (b) A (Accountable) → Approve the work
- (c) C (consulted) → provides input, expert guidance
- (d) I → (Informed) → needs update but not activity involved

Task Project Business Development IT Telco Baa...  
Manager Analyst Seq

A	R	C	I	I	C
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A	C	R	C	I	I
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I	I	R	C	I	I
✓					
I	I	C	R	I	I

I	C	C	R	R	I
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A	C	R	R	C	I
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A	R	C	C	C	T	R
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Explain Software Configuration Management in detail :-

- i) Software Configuration Management (SCM) is process of managing software change systematically.
- ii) It ensure consistency, traceability and collaboration in software development.
- iii) Key activities :- Configuration Identification, change, Control, Auditing, Build & release management.

Tools and techniques:-

- (a) Version Control system :- Git, SVN.
- (b) Branching & Merging :- Git Flow, Feature Branching.
- (c) Build & release management :- Jenkins.
- (d) Infrastructure as code :- Ansible, Chef.
- (e) Issue tracking :- Jira, Trello.

Benefits :-

- (a) Improve team collaboration
- (b) Reduce effort and enhance security
- (c) Enable faster development and automated Action
- (d) Ensure compliance and regulatory tracking

Limitation:-

- (a) Require training & expertise
- (b) Can be complex for small projects
- (c) Risk of merge conflicts in large teams

Explain the Significance of Gantt chart in project Management.

- i) A Gantt chart is a visual project management tool that displays tasks, their duration, dependencies and progress over time.
- ii) It plays a crucial role in planning, scheduling and tracking project activities.
- iii) Key Significance:-
  - (i) Visual representation of project Timeline
  - (ii) Task Scheduling & dependencies
  - (iii) Resource allocation and Blockaded Management
  - (iv) Tracking progress and Info. Milestones
  - (v) Improve communication & coordination
  - (vi) Risk identification & Mitigation.

Benefits of Gantt chart:-

- (a) provide clear picture of entire project
- (b). Helps track deadline & avoid delays
- (c) flexible & adaptable

Limitations:-

- (a) Time consuming to update
- (b) Can become cluttered with too many tasks

(Q7)

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

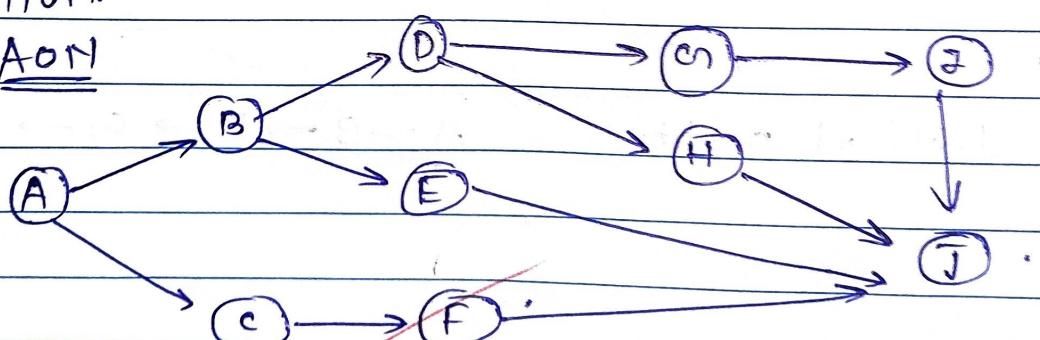
Activity      Time

Immediate Predecessor

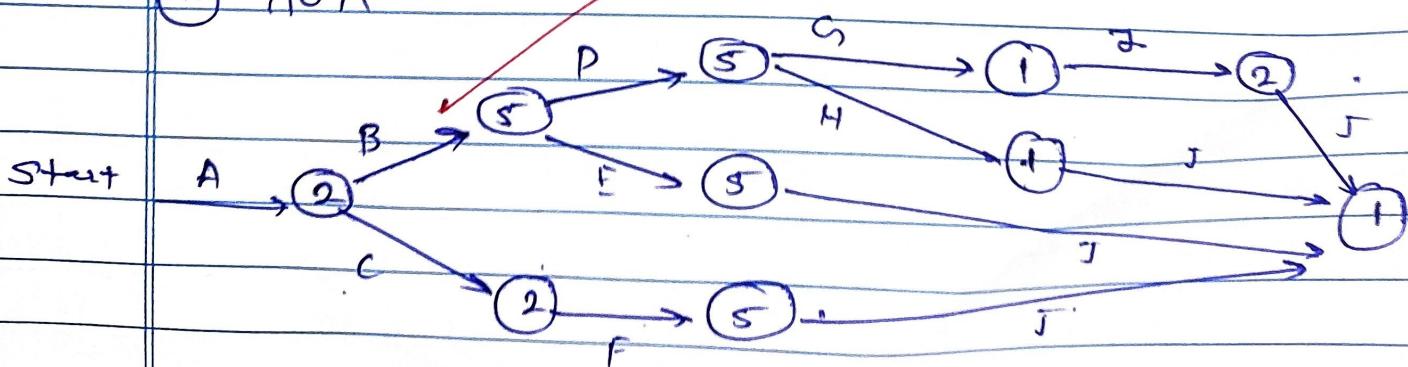
A	2	-
B	5	A
C	2	A
D	5	B
E	5	B
F	5	C
G	1	D
H	1	D
I	2	E
J	1	E, F, H, I, J

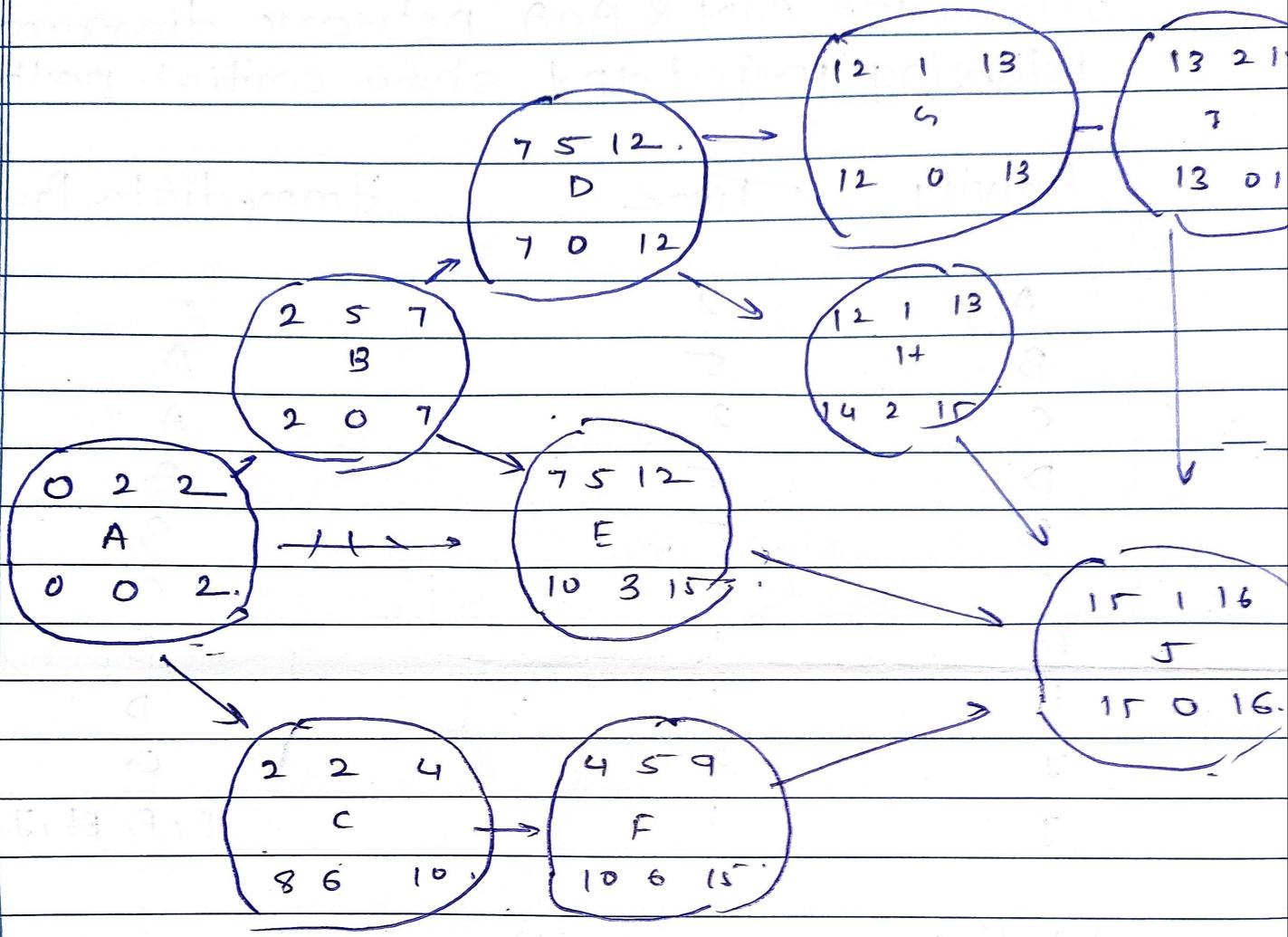
Solution.

(i) AON



(ii) AOA





Critical path:-  $A \rightarrow B \rightarrow D \rightarrow G \rightarrow H \rightarrow J$