ASSIGNMENT NO 4

Q 1 With an example explain PERT chart.

- The program evaluation and review technique (PERT) chart is used to schedule, organize and co-ordinate tasks within the project.
- Objective of PERT chart is to determine the critical path which comprised critical activities that should be completed on schedule.

Advantages using PERT chart :-

- It represents the project in graphical form.
- It provides information about the expected completion of project before the specified date.
- It specifies the activities that form the critical path.
- It specifies start and end date of activities involved in project.
- It describes dependancies of one or more tasks on each other

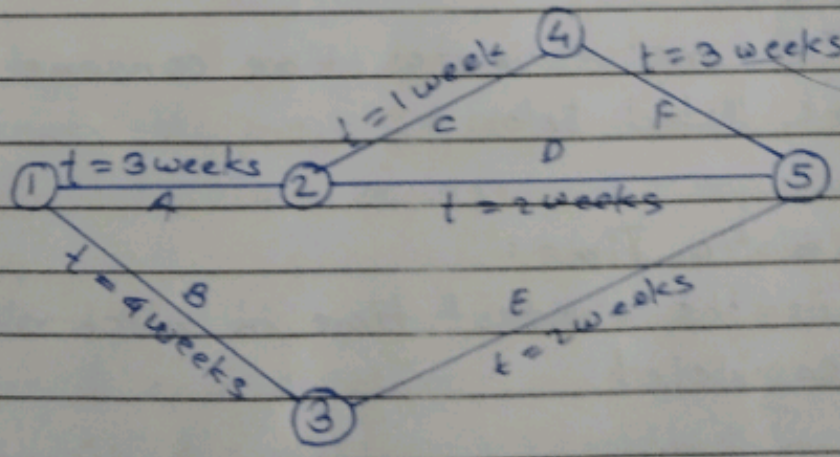

fig. PERT Chart.

- In the above fig. the milestones are numbered as 1, 2, 3, 4, 5 and are represented by either circle or rectangle.
- The activities are represented by A, B, C, D & E, F
- When activities are completed in sequences are known as serial activities.

e.g. Activity A, C & F are performed in sequence

- When two or more activities are being performed simultaneously they are known as concurrent activities or parallel activities.

eg. As shown in fig. activity A & B are performs concurrently

- To create a PERT chart, follow the steps listed below -

1. Identify activities and milestones
2. Identify the sequence of activities
3. Prepare PERT chart
4. Estimate the time consumed in activities
5. Estimate the time consumed in activities :
   - Amount of time for carrying-out each activity is specified.
   - The time estimates, time consume in the activities are listed below -

- Optimistic Time :

- It is the shortest time in which activity can be completed

• Most likely time:
- It is completion time having the highest portability.

• Pessimistic time:
- It is the longest time that an activity may require for completion.

6. Determine Critical Path:
Critical path determines the calender time require to complete a series of activities according to the project schedule

7. Update PERT chart:
Chart is updated, when there is delay in completion of activities or additional resources are required to complete the project on time.

Q.2 Write a note on CPM.
Critical path method (CPM) is a technique that determines activities, which have the least scheduling flexibility (that is critical activities)

The advantages of using critical path method:
- It represents the project in graphical form
- It predicts the time required to complete the project.
- It specifies how to speed up the project so that is completed on schedule
- It specifies the critical activities.

- It specifies the optimal plan for speeding up the project.

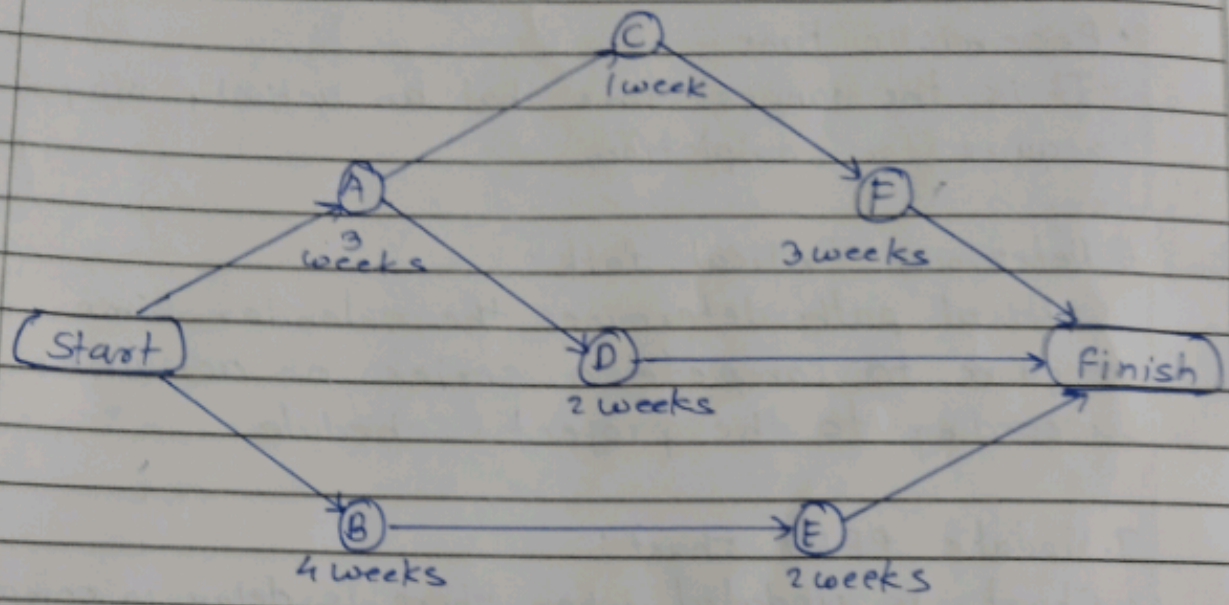

fig. CPM Diagram

- Figure shows the CPM diagram
- It comprises activities and events which forms a network
- The activities are shown in circles and named as A, B, C, D, E & F
- The events begins from 'start' node and ends at 'finish' node
- The line betⁿ activities shows events.
- The line required to complete each activity is indicated along with it.

To create CPM diagram, follow the steps:
- Determine individual activities.

- Determine sequence of activities.
  It describes sequence of activities and time taken to complete each activity.
- Prepare CPM diagram
- Estimate activity completion time
- Identify the critical path
  - The critical path is the path through the project network where no activity is slack.
  - The amount of time for which a non-critical path activity can be delayed without delaying the project is known as slack time.

- Critical path is identifying by determining certain parameters of each activity.

These parameters listed below -
- Earliest start time (ES): start time
- Earliest finish time (EF):
  It is equal to the sum of earliest start time required in completing that activity.
- Latest finish time (LF):
  It is the latest time at which the activity can be completed without delaying the project.
- latest start time (LS):
  It is equal to the difference of latest finish time and the time required for completion of activity.

- Update CPM Diagram :

According to the time taken to complete an activity the CPM diagram is updated.
- CPM is a new critical path in the project.

Q.3] Write a note on risk management.
- Risk is an unexpected event that produces an adverse effect during s/w development process.
- It is the combination of constrains & uncertainties
- Identified by following attributes:

1] Probability than an event will occur:
- An event can occur when s/w developed on one computer system is transferred to another computer system.
- Here both the system can create incompatibility in the hardware or software. This incompatibility causes an event.

2) loss associated with the event:
- The adverse impact of an event can be loss of time, loss of money & lack of expected quality
- Note that there is no fixed time for the occurance of risks.
- It's objective is to determine the loss before risks occur then determine ways to prevent an avoid the adverse impact of risks of the project.

Uncertainty and Constraints :

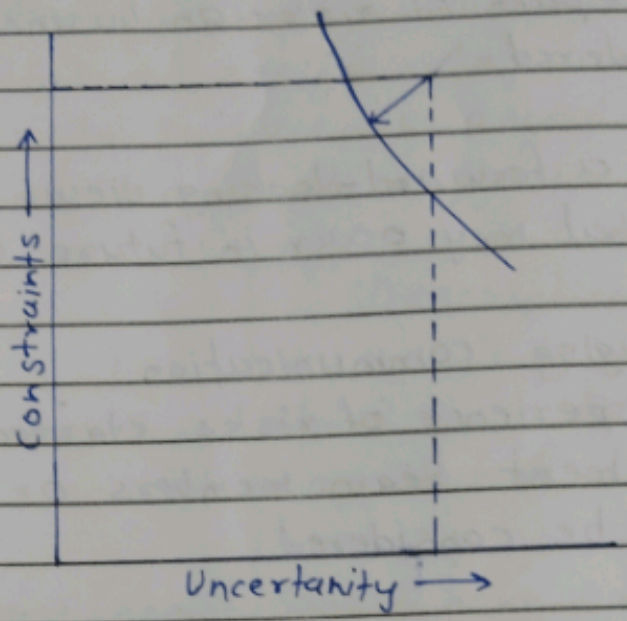

fig. Minimizing risks in projects

- The curved line indicates the acceptable level of risk depending on the project.
- To minimize the risks, one or both of the constraints & uncertainty can be minimized.
- Generally, it is observed that it is difficult to minimize constraints, so uncertainty is reduced.

Principles of risk management :-

- It is essential to manage the risks to prevent loss in an organization.
- If risks are not managed, it may result in project failure.
- These are several principles that help in effective risk management.

1. Maintaining a Global Perspective :
- The impact of risks on business should be considered

2. Having a forward-looking view:
- Risk that may occur in future should be assumed.

3. Encouraging communication :
- The experience of risks started by project management team members or project manager should be considered.

4. Developing a shared software vision :
- Both project management team and the senior management should be able to view the s/w and its risks with a common objective.

5. Encouraging team work :
- The skills & knowledge of every person involved in risks management should be combined when risk management activities are performed.

Q.4] Write a note on project staffing :
- The number of team members required in a project depends on the type of project and the effort & cost required for it.
- It is important to consider skill & experience required to carry out a task efficiently.
- Project staffing is the process of searching.

evaluating and establishing a working relationship among the personal involved in project.
- It is important to assign roles and responsibilities to individuals according to their skills, abilities and experience

	Factor	Description
1.	Application domain experience.	Should have experiance of application domain
2.	Platform experience (operating system)	Should have experience of the platform.
3.	Programming language experience	Team members should have working experience of the programming language.
4.	Educational Qualification.	Team members should have be well qualified.
5.	Communication Ability.	Team members should have be well qualified.
6.	Adaptability	Team members should have ability to adjust to the organizational environment.
7.	Attitude	Team members should have

	positive attitude towards their work & should be ready to learn new skills.
8. Team members spirit.	Team members should be compatible with other individuals.

Table : Factors assisting staff selection.

- Some principles are followed in project staffing :-

1) The task should be assign to staff member according to their skills of ability.

2) Every staff member should be assigned to designation.

3) Staff members should be employed according to their requirement in the project only after the project is approved.

4) Every staff member should be considered to follow the guidelines & standards of the organization.

Q.5] Explain milestones with its advantages.

- Milestones are formal representations of the progress of the project.
- Milestone have serveral advantages :-

1] They avoid losing control of the project accoading to the schedule.

2] They help in completing project according to the allocated budget.

3] They report status of the project to the management.

Requirements	
milestone 1	Feasibility study
	Outline requirement definition
milestone 2	Design Study
milestone 3	Requirement Specification

Design	
milestone4	Architectural design
	Interface design
milestone5	
	Formal Specification
milestone6	
	Detailed design
milestone7	
	Implementation

fig. Milestones.

- In project scheduling, there are several aspects:

i) Techniques of project scheduling
ii) Task network
iii) Tracking the schedule

Advantages of milestones :-

1) They provide a structure and orientation for project participants, in terms of time and content and enable projects to be synchronized with each other.

2) They are easy to monitor and make it possible to compare plan and actual. Threats to projects are identified, for example, with a milestone trend analysis.

3) They support a planned transition between project phases and promote communication between project participants.

4) Ideally, they have a quality-assuring and motivating effect.

5) In project plans they can be recognised by the diamond symbol.

Q.6] Write a note on CMM.

- The capability of people is essential for the success of an organization.
- It is important that their skills are developed so that the organizational is able to get the best possible returns on its investment expanded on the people.
- For this purpose, people capability maturity model is used
- Objectives of this maturity model are listed below:

Improving the capability of software organization by increasing the capability of the staff.
- Ensuring that s/w development capability is a characteristic of the organization rather than of few individuals.
- Aligning the motivation of people along with the motivation of the organization.
- Helping organization to retain people with extensive skills and knowledge.
- This model is used in areas such as staffing, managing performance, training work environment organizational & individual competence.
- As shown in fig. P-CMM has five levels.

1] Initial:

- At this level an organization takes no active role in developing skills in people working within it.
- Organizations at this level do not consider people

as important resources.
- People have their own objectives regarding their career & move from one job to another to accomplish them
- There are unplanned practices of people management.
- The skills used in management are based on experiment & personal communication skill instead of formal management training.

2) Repeatable:
- At this level, the organization considers growth & skill development of people as essential factors for growth of organization.
- The organization discuss the performance of people with them & reward them accordingly
- The training is came out to enhance the present skill of the people.

3) Defined:
- A strategic plan is coeated to find and developed the talent of people required for the organization
- The people are reworded if they develop their skills & work competently.

4) Managed:
- At this level, people are encouraged to learn skills.
- Organization set quantitative objectives for core

competency growth.
- People are motivated to perform better both as individual & as a team.

5] Optimizing :
- At this level, the focus is on the continuous improvements in their performance.
- Analysis of earlier data is done to determine the improvements in their performance.
- Practices are introduced in an organization by changing the existing practices or by introducing new and innovative practices.

Principles of people CMM :

1. People capability is a compatative issue.
2. The people capability should be defined in relation to the business objectives of the organization.
3. An organization should invest in improving the capabilities & skills of the people as they are important for its success
4. The management should be responsible for enhancing the capability of the people in the organization.
5. The improvement in the capability of people should be done as a process.
6. The organization should be responsible for providing improvement opportunity
7. The organization should continuously improve their practices & develop the ability of people.

Optimizing

Continously improve methods for developing personal & organizational competence	Cont. work force innovation coaching personal competency Development

Managed

Quantitative manage organizational growth in workforce capabilities and establish competency based teams.	Organizational performance Alignment organizational competency mngt team-based practices · Team Building Mentoring

Defined

Identify primary competencies and align workforce activities with them	Participatory culture Competency-based practices Career Development Competency Development Workforce planning Knowledge & skills Analysis.

Repeatable

Install basic discipline into workforce activities	Compensation Training Performance management staffing Communication Work environment

Initial

fig. People Capability Maturity Model