

ASSIGNMENT

Q) (A) Answer the following:

1. The path on the network diagram which consumes the maximum amount of time is called as
→ Critical Path
2. Which out of the foll is the first phase of Project Management
→ Initiation
3. Activities D,E, and F are the immediate successors for B activity. If the latest start time for the three activities are 15, 19 and 17, then what will be the latest finish time B.
→ 14
4. The part of the total float which causes a reduction in the float of the successor activity is.
→ Interfering float.
5. PERT stands for
→ Project Evaluation Review Technique.
6. Expenses of power consumption for running various equipment is the example of.
→ Variable Cost.
7. Salary of a peon working in office of Project Manager is the example of.
→ Indirect Labour cost

8. Cost uncertainty is generally maximum when the project is in the initial stage
- In which type of budgeting WBS is given more importance
- Bottom Up.
9. In the process of estimates of the cost of a project, if the costs are underestimated then
- Project will be unprofitable.

Q2 (A) Define the following terms.

1. Project: A sequence of tasks that must be completed to attain a certain outcome is defined as a project
2. Project Management: Project Management defines as the use of specific knowledge, skills, tools and techniques to deliver something of value to people.
3. Project Stakeholder: Project Stakeholders are individuals, groups or organization that have an interest in or are affected by a project and its outcomes
4. Matrix Organization Structure: It is a hybrid organizational framework that combines elements of both functional and project based structures.

Q2 (B) What is Project Charter? Explain its significance and the contents of a Project Charter.

→ A project charter is a formal document that outlines the project's objectives, scope, stakeholders and overall framework.

Significance:

1. Authorization: The project charter formally authorizes the project and gives the project manager the authority to allocate resources and make decisions.
2. Clarity and Alignment: It helps clarify the project's objectives and scope, ensuring that all stakeholders are aligned on the project's goals and expectations from outset.
3. Stakeholder Engagement: The charter identifies key stakeholders and their roles, fostering engagement and communication among them.
4. Guidance and Direction: It serves as a reference document throughout the project lifecycle, guiding focused on its objectives.
5. Risk Management: By outlining the project's scope, objective and stakeholder the charter helps identify potential risks and challenges early on.

Contents:

1. Project title.
2. Project Purpose and justification.
3. Project Objectives.
4. Scope Description
5. High level Requirement.
6. Key Stakeholders.
7. Project Risks.
8. Budget Overview
9. Project Timeline
10. Approved Signatures.

Q3 (A) what do you understand by WBS? state the types of WBS? Do Explain any one of them with the help of an example.

→ WBS is a hierarchical decomposition of a project into smaller, more manageable components or deliverables

Importance:

1. Clarity and Focus
2. Task Organization
3. Resource Allocation
4. Improved Planning and Scheduling
5. Risk Management

Types:

1. Deliverable based WBS.
2. Phase-Based WBS.
3. Geographic-Based WBS.
4. Functional-Based WBS.

1. Deliverable-Based WBS:

- Focuses on the Project's deliverables or outputs.
- Each level references a different deliverable or outcome, breaking it down into smaller components.

e.g.: 1) Website Development Project.

- 1.0 Project Management
 - 1.1 Project Planning
 - 1.2 Project Monitoring
 - 1.3 Stakeholder Communication
- 2.0 Requirements Gathering
 - 2.1 User Interviews
 - 2.2 Requirements Documentation
 - 2.3 Approval of Requirement
- 3.0 Design
 - 3.1 Wireframes
 - 3.2 Visual Design
 - 3.3 Design Approval
- 4.0 Development
 - 4.1 Front-End Development
 - 4.2 Back-End Development
 - 4.3 Database Setup
- 5.0 Testing
 - 5.1 Unit Testing
 - 5.2 Integration Testing
 - 5.3 User Acceptance Testing

Q3 (B) Explain the key elements of effective project planning.
→ Effective Project Planning is crucial for ensuring that a project is completed on time, within budget and meets its objectives.

- ① Clear objective & goal: Defining the project's purpose, scope & desired outcomes is the foundation of project planning.
- ② Project Scope: Clearly outlining what is and isn't included in the project helps prevent scope creep.
- ③ WBS: The WBS breaks the project down into manageable tasks and sub-tasks.
- ④ Resources Allocation: Effective allocation ensures that resources are available when needed and aren't wasted.
- ⑤ Timeline & Schedule: Developing a detailed project schedule, including milestones, deadlines and the sequencing of tasks is essential for tracking progress.
- ⑥ Risk Management: Effective risk management helps avoid delays and unexpected costs.
- ⑦ Budgeting: Regular Budget tracking helps in avoiding cost overruns.

Q4 (A) Functional organization structure is preferred over the projectized organization structure in case of a company which keeps dealing with multiple long duration projects. Evaluate the statement and justify your answer.

→ A functional organization structure may be preferred over a projectized structure for companies handling multiple long duration projects because:

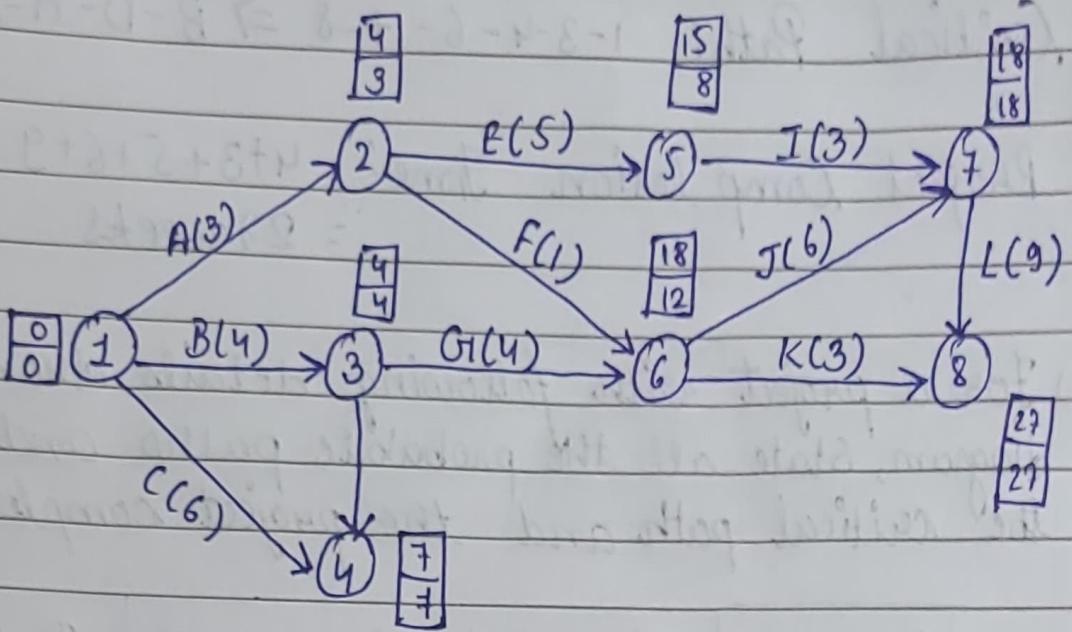
Resource Efficiency: In a functional structure resources are shared across multiple projects, avoiding over allocation of personnel and equipment. This is important for long-term projects where full-time dedication of resources may not be needed.

Specified Expertise: Employees work within their specialized departments, leading to deep expertise, which is valuable for complex long-term projects.

Sustainable Career Growth: Employees have clear career paths within their functions promoting professional development and long-term retention.

(Q) (B) For a project with following details. draw the network diagram. state all the probable paths and determine the critical path and project completion duration.

Activity nodes	Activity	Duration (in weeks)
1-2	A	3
1-3	B	4
1-4	C	6
3-4	D	3
2-5	E	5
2-6	F	1
3-6	G	4
4-6	H	5
5-7	I	3
6-7	J	6
6-8	K	3
7-8	L	9



$$ES_j = \max_i (ES_i + D_{ij})$$

$$LC_i = \min_j (LC_j - D_{ij})$$

EST: for node 1, $ES_1 = 0$

for node 2, $ES_2 = 0 + D_{12} = 0 + 3 = 3$

for node 3, $ES_3 = 0 + 4 = 4$ & so on.

LCT: for node 8, $LC_8 = 27$.

for node 7, $LC_7 = 27 - D_{78} = 27 - 19 = 18$.

for nodes 6 = $LC_6 = LC_7 - D_{67} = 18 - 6 = 12$ & so on.

All the probable paths:-

① 1-2-3-7-8

⑥ 1-3-4-6-8

② 1-2-6-7-8

⑦ 1-4-6-7-8

③ 1-2-6-8

⑧ 1-4-6-8

④ 1-3-6-7-8

⑨ 1-3-6-8

⑤ 1-3-4--6-7-8

Critical Path: 1-2-6-7-8
A-F-I-J

$$\text{Project Completion Time} = 4+5+4+7 \\ = 20 \text{ weeks.}$$

Qs (a) State various types of budgeting methods so explain any one of them in details

Types:

1. Increment Budgeting
2. Activity - Based Budgeting.
3. Zero - Based Budgeting.
4. Rolling Budgeting
5. Top - Down Budgeting
6. Bottom - Up Budgeting
7. Flexible Budgeting

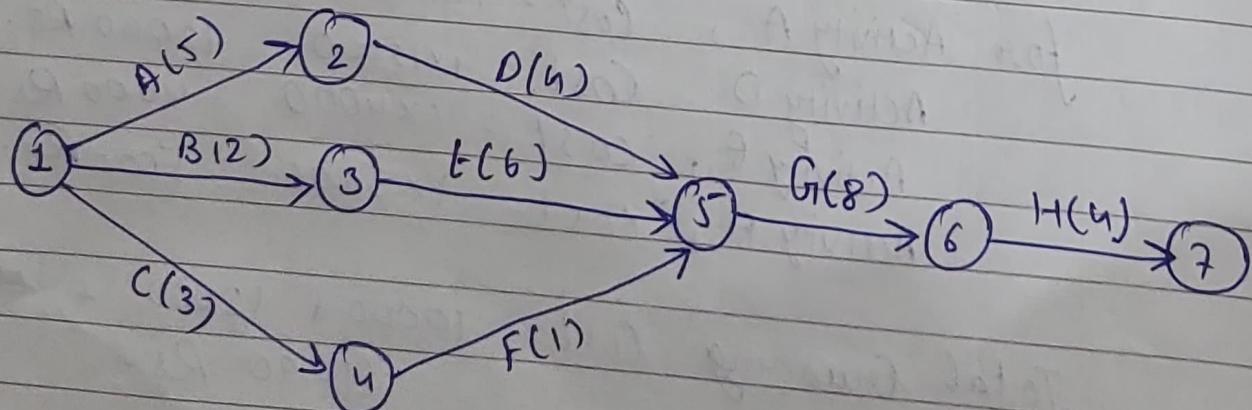
Bottom - Up Budgeting:

- Bottom - Up Budgeting is a budgeting method where individual departments or teams create their own budgets based on their specific needs, goals and expenses.
- The individual budgets are then aggregated to form the overall organisational budget

Q5(B) Following are the details of a project. The cost of completing all the activities in Normal time is Rs. 7,00,000. The overhead cost per day is Rs 7000

Activity Nodes	Activity	Normal Duration	Shortest Duration	Crash Cost / day (Rs.)
1 - 2	A	5	4	
1 - 3	B	2	2	10000
1 - 4	C	3	2	-
2 - 5	D	4	2	2000
3 - 5	E	6	3	12000
4 - 5	F	6	5	4000
5 - 6	G	8	8	-
6 - 7	H	4	3	-
				5000

Network Diagram:



Various Paths:

- ① 1-2-5-6-7 : $5+4+8+4 = 21$ days.
- ② 1-3-5-6-7 : $2+6+8+4 = 20$ days
- ③ 1-4-5-6-7 : $3+1+8+4 = 16$ days

Critical Path: 1-2-5-6-7

A-D-G-H

Project Completion Time (Normal) =
 $5+4+8+4 = 21$ days.

By crashing all the critical activities, Project Completion Time (minimum) : $4+3+8+3 = 18$ days

Total cost for Normal duration

$$\begin{aligned} &= \text{Direct Cost} + \text{Indirect Cost} \\ &= 7,00,000 + 21 \times 7000 \\ &= 8,47,000 \text{ Rs.} \end{aligned}$$

To crash the project to 18 days, we need to crash activities A, D, E & H by 1 day.

for Activity A, Cost = $1 \times 10000 = 10000 \text{ Rs.}$

Activity D, Cost = $1 \times 12000 = 12000 \text{ Rs.}$

Activity E, Cost = $1 \times 4000 = 4000 \text{ Rs.}$

Activity H, Cost = $1 \times 5000 = 5000 \text{ Rs.}$

Total Crashing Cost = $10000 + 12000 + 4000 + 5000 = 31000 \text{ Rs.}$

Overhead (indirect cost) for 18 days:
 $18 \times 7000 = 1,26,000 \text{ Rs.}$

Total cost for minimum duration:

Direct cost + Indirect cost.

$$7,00,000 + 31000 + 1,26,000 \\ 8,57,000 \text{ Rs.}$$

Q6 (A) what is significance of monitoring a project? ●
what aspects of project are to be monitored?

Significance:

- Monitoring a project is critical for ensuring that it stays on track and meets its objectives within the defined scope, time & budget
- Progress Tracking: Ensures the project is progressing as planned and on schedule.
- Budget control: Tracks expenses to prevent cost over runs and, ensure financial resources are used efficiently

Aspects:

1. Schedule (Time):
→ Track the completion of tasks and milestones.
2. Budget (Cost):
→ Monitor actual spending against the project budget.
3. Scope:
→ Ensure that the project is defining on the agreed upon scope.

4. Resources:

→ Track resource availability and allocation to avoid bottlenecks or underutilization

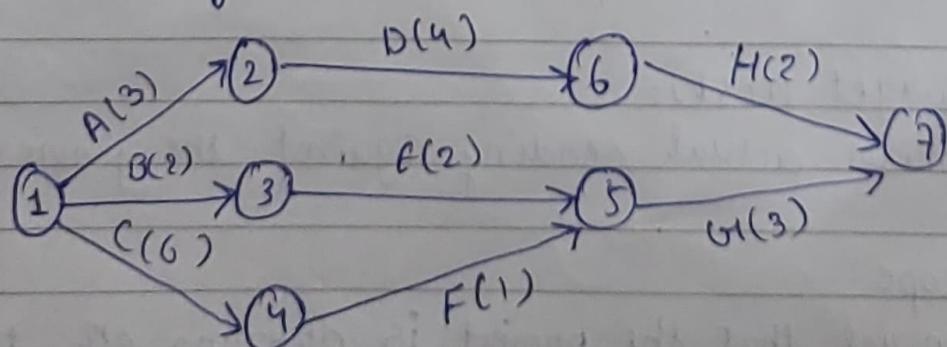
5. Risks:

→ Continuously identify and assess risks that could impact the project

- Q6(b) A Project consisting various activities each of which requires either or both resources X & Y for its performance. The duration of the activities & their resource requirements are as under.

Activity	Duration (days)	Resource	Requirement
1-2	3	3	2
1-3	2	6	-
1-4	6	4	-
2-6	4	-	4
3-5	8	2	2
4-5	1	4	-
5-7	3	3	2
6-7	2	1	3

Network Diagram:



Various Path:

- ① 1-2-6-7 : $3+4+2 = 9$ days.
- ② 1-3-5-7 : $2+2+3 = 7$ days
- ③ 1-4-5-7 : $6+1+3 = 10$ days

Critical Path: 1-4-5-7 \Rightarrow C-F-G

Project completion Time without resource constraints:
 $6+1+3 = 10$ days

Resource $x = 7$ units, y units = 5 units

Day-by-day scheduling (with resource constraints)

Day 1-3: Activities running:
1-2 ($x=3, y=2$)
1-3 ($x=6$)

Total resource usage: $x=3+6=9$.

\therefore It uses more x resource than availability.
 \therefore Activities 1-3 finishes in Day 2.

Day 3-4: Activities running
1-2 ($x=3, y=2$)

Total resource usage: $x=3, y=2$.
 \therefore Activities 1-2 finishes in Day 4.

Day 5-6: Activities running
1-4 ($x=4, y=0$)

Total resources usage: $x=4$
 \therefore Continue running Activity: 1-4

Day 7: Activities running.

1-4 ($x=4$), 3-5 ($x=2, Y=2$)

Total resource usage: $x=6, Y=2$

∴ Activity 3-5 finishes.

Day 8: Activities running.

2-6 ($x=4, Y=0$)

∴ Activity 2-6 continues.

- with resource constraints, the project duration will be extended, beyond 10 days, due to over-lapping resource needs.
- without resource constraints the project would take 10 days.