

1. Describe three advantages of using activity networks for project scheduling.
  - a. Improved visualization: Activity networks provide a clear visualization of the project tasks, their dependencies, and the critical path. This allows project managers to easily identify potential scheduling conflicts and make informed decisions.
  - b. Better resource allocation: Activity networks enable project managers to identify the resources required for each task and allocate them effectively. This helps to ensure that resources are not overallocated or underutilized.
  - c. Increased efficiency: By using activity networks, project managers can optimize the scheduling of tasks to reduce the project duration and increase efficiency.
2. Define the critical path in a project. Why is it important to understand what it is and what affects it?
  - a. The critical path in a project is the sequence of tasks that must be completed on time in order to complete the project within the specified timeframe. It is important to understand the critical path because any delay in completing a task on the critical path will result in a delay in the entire project. Understanding what affects the critical path helps project managers identify potential risks and plan accordingly to mitigate them.
3. Define the Critical Path Method (CPM). Both chapters might assist with this question.
  - a. The Critical Path Method (CPM) is a project management technique used to determine the critical path in a project. It involves identifying all the tasks required to complete a project, their dependencies, and their duration. The critical path is then determined by identifying the longest sequence of tasks that must be completed on time to complete the project within the specified timeframe.
4. Define Program Evaluation and Review Technique (PERT). Both chapters might assist with this question.
  - a. Program Evaluation and Review Technique (PERT) is a project management technique used to estimate the time required to complete a project. It involves identifying the tasks required to complete a project, their dependencies, and their

duration. PERT uses statistical analysis to estimate the time required to complete each task and the overall project duration

5. The two most common methods for constructing activity networks are Activity-on-Arrow (AOA) and Activity-on-Node (AON). Briefly compare and contrast the two. Both chapters might assist with this question.
  - a. The two most common methods for constructing activity networks are Activity-on-Arrow (AOA) and Activity-on-Node (AON). AOA represents tasks as arrows and nodes, with the arrows representing tasks and the nodes representing events. AON represents tasks as nodes, with the nodes representing tasks and the arrows representing dependencies. AON is more commonly used than AOA because it is easier to understand and use.
6. The text describes four methods for reducing the critical path. Describe two of these.
  - a. One method for reducing the critical path is shortening the duration of it. This involves overlapping tasks that would normally be done in sequence to reduce the project duration. However, this can increase the risk of errors and conflicts.
  - b. Another method would be to eliminate tasks on the critical path. However, this approach also means that the project may not deliver all of the intended benefits or meet all of the requirements.
7. What is a Gantt chart? Describe two benefits of using them for project management.
  - a. A Gantt chart is a project management tool used to visualize the schedule of tasks in a project. It shows the start and end dates of each task, their duration, and their dependencies. Two benefits of using Gantt charts are that they provide a clear visualization of the project schedule and help project managers track progress.
8. What do we mean by 'crashing a project'? What are two reasons for crashing a project?
  - a. Crashing a project refers to the process of shortening the project duration by adding more resources to critical path tasks. This can be done by assigning additional staff, adding overtime, or using more efficient equipment or processes. The goal is to reduce the duration of the critical path and thus the overall project

duration, but this comes at a cost - adding more resources generally means spending more money.

9. The text describes six techniques for crashing a project/accelerating it. Describe two of them.
  - a. One option would be to add resources. This technique involves adding more resources, such as staff or equipment, to critical path tasks in order to speed up the project duration. By adding more resources, the tasks can be completed more quickly, which can reduce the overall duration of the project. However, adding resources can also increase costs and may not always be feasible if there are limited resources available.
  - b. Another option would be to use overtime. Accelerating a project sometimes requires workers to put in extra hours, either by working longer days or working on weekends. This can help speed up the completion of tasks, especially if the tasks are on the critical path. However, requiring workers to work overtime can be costly, and it may also lead to burnout or reduced productivity if workers become fatigued. Therefore, it's important to carefully manage overtime to ensure that it is used effectively and fairly.