4 Project Management - exam questions

You should know the answers to these questions

Name the five activities covered by project management.

1. **Planning**: Breaking down the project into tasks and scheduling resources.
2. **Organization**: Defining who is responsible for what.
3. **Staffing**: Recruiting and motivating team members.
4. **Directing**: Ensuring the team works cohesively towards project goals.
5. **Monitoring (Controlling)**: Detecting deviations and taking corrective actions.

What is a milestone? What can you use them for?

- **Milestone**: A verifiable goal achieved after task completion, often customer-verifiable.
- **Uses**:
  - Monitoring project progress.
  - Ensuring clear and unambiguous project checkpoints.

What is a critical path? Why is it important to know the critical path?

- **Critical Path**: The longest sequence of dependent tasks, where any delay affects the entire project.
- **Importance**:
  - Identifies tasks critical to on-time delivery.
  - Guides prioritization of resources and effort to avoid delays.

What can you do to recover from delays on the critical path?

1. **Add senior staff for well-specified tasks outside the critical path.**
2. **Prioritize and deliver incrementally**:
   - Focus on delivering the most critical functionalities first.
   - Maintain testing priorities.
3. **Extend deadlines if necessary**.

How can you use Gantt-charts to optimize the allocation of resources to a project?

- **Gantt Charts** can:
  - Visualize time allocation and task schedules.
  - Identify and optimize resource usage by balancing workloads and avoiding bottlenecks.

What is a "Known kown", and "Unknown known" and an "Unknown Unknown"?

- **Known knowns**: Things you know and can plan for.
- **Known unknowns**: Things you know you don't know, requiring contingency plans.
- **Unknown unknowns**: Things you don't know that you don't know; best addressed by thorough risk analysis and flexibility.

How do you use PERT to calculate the risk of delays to a project?

1. **Estimate task times**:
   - Optimistic, likely, and pessimistic durations.
2. **Calculate Expected Time (ET)** and Standard Deviation (S) for tasks.
3. **Analyze critical and risky paths**:

- Use ETs to recalculate the critical path.
- Determine risks based on deviations.

Why does replacing a person imply a negative productivity?

- Transition periods involve:
  - Reduced output from outgoing staff (e.g., documentation).
  - Extra time for the new member to integrate.
  - Disruptions to colleagues during onboarding.

What's the difference between the 0/100; the 50/50 and the milestone technique for calculating the earned value?

1. **0/100**: 0% earned until a task is fully completed; pessimistic.
2. **50/50**: 50% earned when started, 100% when completed; may be optimistic.
3. **Milestone Technique**: Earned value calculated based on completed milestones; ideal for large, milestone-driven tasks.

Why shouldn't managers take on tasks in the critical path?

- Managers taking critical tasks risk delays due to their concurrent responsibilities, creating bottlenecks and potential conflicts of interest.

What is the "definition of done" in a Scrum project?

- A **checklist** ensuring all work is completed to a standard making it shippable, including tasks like design reviews, coding, testing, and deployment.

Give a definition for a Squad, Tribe, Chapter and Guild in the spotify scrum model.

1. **Squad**: A cross-functional team working like a Scrum team.
2. **Tribe**: A group of squads collaborating on related components/features.
3. **Chapter**: Specialists within a tribe sharing expertise (e.g., frontend developers).
4. **Guild**: Interest groups across multiple tribes (e.g., DevOps enthusiasts).

You should be able to complete the following tasks

draw a PERT Chart, incl. calculating the critical path and the risk of delays

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draw a Gant chart, incl. allocating and optimizing of resources

…

draw a slip line and a timeline

…

Can you answer the following questions?

Name the various activities covered by project management. Which ones do you consider most important? Why?

Activities include **planning, organizing, staffing, directing, and monitoring**. Monitoring is crucial because it ensures the project stays aligned with the plan, enabling timely corrective actions.

How can you ensure traceability between the plan and the requirements/system?

Using small, clearly defined tasks and milestones verifiable by customers helps maintain traceability.

Compare PERT-charts with Gantt charts for project planning and monitoring.

- **PERT charts** emphasize task dependencies and critical path analysis.
- **Gantt charts** focus on time management, resource allocation, and visualizing slack time.

How can you deal with "Unknown Unknowns" during project planning?

Perform thorough risk analysis and tackle critical risks early while maintaining flexibility in plans.

Choose between managing a project that is expected to deliver soon but with a large risk for delays, or managing a project with the same result delivered late but with almost no risk for delays. Can you argue your choice?

A late delivery with low risk is preferable because it offers stability and customer satisfaction. High-risk projects jeopardize commitments.

Describe how earned-value analysis can help you for project monitoring.

It tracks completed work against planned timelines, enabling progress assessment and identifying delays early.

Would you consider bending slip lines as a good sign or a bad sign? Why?

Bending right indicates ahead-of-schedule tasks (good), while bending left shows delays (bad). Both must be managed to align the overall timeline.

You're a project leader and one of your best team members announces that she is pregnant. You're going to your boss, asking for a replacement and for an extension of the project deadline. How would you argue the latter request?

Explain productivity loss during the transition, potential delays in training replacements, and the need to maintain quality without overburdening the team.

You have to manage a project team of 5 persons for building a C++ compiler. Which team structure and member roles would you choose? Why?

A **centralized team structure** works best for predictable tasks. Roles:

1. Lead Programmer (core logic).
2. Developer 1 (parsing).
3. Developer 2 (code generation).
4. Tester (quality assurance).
5. Documenter (manuals/user guides).

Can you give some advantages and disadvantages of scrum component teams and scrum feature teams.

- **Component teams:**
  - **Advantages:** Specialized knowledge, efficient handling of specific modules.
  - **Disadvantages:** Cross-team dependencies.
- **Feature teams:**
  - **Advantages:** End-to-end responsibility, reduced dependencies.
  - **Disadvantages:** Broader skill requirements, longer ramp-up times.