**Subject Area Exam – Project Management**

1. What are the four P's of effective project management?

Answer (Section 31.1):

people, product, process, and project

1. What steps can be take to avoid many of the problems that cause software projects to fail?

Answer (Section 31.5):

* Start on the right foot
* Maintain momentum
* Track progress
* Make smart decisions
* Conduct a postmortem analysis

1. List 4 of the 6 critical software practices required by performance-based management.

Answer (Section 31.7):

* formal risk management
* empirical cost and schedule estimation
* metric-based project management
* earned value tracking
* defect tracking against quality targets
* people-aware program management

4. How do software process metrics differ from software project metrics?

Answer (Section 32.1):

Process metrics are used to make strategic decisions about how to complete (and ultimately, improve) common process framework activities while project metrics are used to monitor progress during a software development project and to control product quality.

5. What are the goals for using object-oriented software metrics?

Answer (Section 32.2.4):

* To better understand product quality
* To assess effectiveness of the process
* To improve the quality of work performed at the project level

6. What are four useful indicators of software quality that should have measures defined and

monitored by the software project team?

Answer (Section 32.3.1):

correctness, maintainability, integrity, usability

7. Why is it important for software developers to make use of measurement to guide their

work?

Answer (Section 32.4.1):

Developers need to measure so that they can tell whether they are improving or not. Without measurements this is extremely difficult to achieve.

8. What is the objective of project planning?

Answer (Section 33.2):

To provide managers with a framework to make reasonable estimates of the resources and time required for building a software product.

9. Why is a feasibility assessment part of the planning process?

Answer (Section 33.3):

If a project is not technically possible, there is no point in trying to build it. But technical feasibility is not the whole story. The project must also fulfill a business need to avoid building a high tech product that does not have any customers.

10. What resources are typically included in the project estimation process?

Answer (Section 33.4):

Human resources (number of people and skills needed)

Reusable software resources (off-the-shelf components, work products from past projects, new components that must be built)

Environmental resources (availability and scheduling needed development hardware and software).

11. List 3 principles for scheduling software projects.

Answer (Section 34.2.1):

Compartmentalization, interdependency, time allocation, effort validation, defined responsibilities, defined outcomes, defined milestones

12. In software project scheduling work, what is a task (or activity) network?

Answer (Section 34.4):

A task network is a graphic representation depicting software engineering task dependencies and the workflow for a project.

13. What is "earned value analysis" as it relates to project scheduling?

Answer (Section 34.6):

Earned value is a measure of progress. It enables you to assess the “percent of completeness” of a project using quantitative analysis rather than rely on a gut feeling.

14. How are project risks different from technical risks?

Answer (Section 35.2):

Project risks threaten the project plan, if they become real the schedule may slip or the cost will increase. Technical risks threaten the product quality or timeliness, if they become real implementation becomes more difficult or impossible.

15. Describe the process of building a risk table.

Answer (Section 35.4.1):

Project teams begin by listing all risks. Each risk is categorized by type and its probability is estimated. The impact value of each risk is assessed. Risk probability and impact are used to sort the table. Risks are then classified as high impact or low impact by defining a "cutoff" line. High impact risks (those above the line) receive management attention.

16. List three issues that must be dealt with in an effective strategy for dealing with risk.

Answer (Section 35.6):

Risk avoidance, risk monitoring, risk management & contingency planning

17. What is forward engineering?

Answer (Section 36.5.2):

Forward engineering recovers design information from existing source code and uses this information to reconstitute the system and improve its quality and/or performance.

18. What activities are associated with reverse engineering?

Answer (Section 36.6):

Understanding process (source code analysis), understanding data internal structures and databases, reconstructing user models from user interface structure and behavior

19. What are the benefits of software restructuring?

Answer (Section 36.7):

* Improved program and documentation quality
* Makes software easier to learn, reduces frustration, and improves productivity
* Reduces effort required to maintain software
* Software is easier to test and debug