

## Chapter 13 Progress and Performance Measurement and Evaluation **Answer Key**

### Multiple Choice Questions

1. A project monitoring system involves all of the following except:

- A. Determining what date to collect
- B. Determining how, when, and who will collect the data
- C.** Adjusting the data
- D. Analysis of the data
- E. Reporting current progress

A project monitoring system involves determining what data to collect; how, when, and who will collect the data; analysis of the data; and reporting current progress.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Structure of a Project Monitoring Information System*

*Level: Easy*

2. Adequate project controls have the advantage(s) of:

- A. Holding people accountable
- B. Prevents small problems from getting large
- C. Keeping focus
- D. Both A and B are correct
- E.** A, B, and C are all correct

See list on page 453.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Structure of a Project Monitoring Information System*

*Level: Medium*

3. A typical project progress report would contain all of the following sections except:

- A. Progress since last report
- B. Problems and issues since last report
- C. Current status of project
- D. Corrective action planned
- E.** All of these are typical sections

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Structure of a Project Monitoring Information System*

*Level: Easy*

4. The first step in the project control process of the measurement and evaluation of project performance is to

- A.** Set a baseline plan
- B. Determine the project objectives
- C. Determine the project deliverables
- D. Analyze the project budget
- E. Review the project priority matrix

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: The Project Control Process*

*Level: Easy*

5. The second step in the project control process of the measurement and evaluation of project performance is to:

- A. Review the baseline plan with top management
- B. Analyze inputs to control system
- C. Compare plan against actual
- D.** Measure progress and performance
- E. Review spending with team members

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: The Project Control Process*

*Level: Easy*

6. The third step in the project control process of the measurement and evaluation of project performance is to:

- A. Review the baseline plan with top management
- B. Analyze inputs to the control system
- C.** Compare the plan against actual performance
- D. Measure both progress and performance
- E. Review spending with team members

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: The Project Control Process*

*Level: Easy*

7. The last step in the project control process of the measurement and evaluation of project performance is to:

- A. Take appropriate action
- B. Prepare a report to top management
- C. Follow up on corrective action
- D. Measure progress and performance
- E. Review spending with team members

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: The Project Control Process*

*Level: Easy*

8. In monitoring project time (schedule) performance actual performance should be compared to:

- A. Budgets for the current year
- B. Top management's targets
- C. Project network schedule derived from the WBS/OBS
- D. Progress on similar past projects
- E. Previous status reports

A major goal of progress reporting is to catch any negative variances from plan as early as possible to determine if corrective action is necessary. Fortunately, monitoring schedule performance is relatively easy. The project network schedule, derived from the WBS/OBS, serves as the baseline to compare against actual performance.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Monitoring Time Performance*

*Level: Easy*

9. A typical tool used to communicate project status is a:

- A. Project network diagram
- B.** Gantt Chart
- C. A PERT chart
- D. Both A and B are correct
- E. A, B, and C are all correct

Gantt charts (bar charts) and control charts are the typical tools used for communicating project schedule status.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Monitoring Time Performance*

*Level: Easy*

10. A tool used to monitor past project schedule performance, current performance, and to estimate future schedule trends is a simple line chart known as a:

- A.** Project schedule control chart
- B. Gantt chart
- C. PERT chart
- D. Network diagram
- E. Milestone chart

This chart is another tool used to monitor past project schedule performance and current performance and to estimate future schedule trends.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Monitoring Time Performance*

*Level: Easy*

11. An *Earned Value System* used to monitor project progress includes comparison of

- A. Actual costs versus budget
- B. Schedule progress versus plan
- C. Quality progress versus plan
- D. Both A and B are correct**
- E. A, B, and C are all correct

The earned value system starts with the time-phased costs that provide the project budget baseline, which is called the planned budgeted value of the work scheduled (PV). Given this time-phased baseline, comparisons are made with actual and planned schedule and costs using earned value. The earned value approach provides the missing links not found in conventional cost-budget systems.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Development of An Earned Value Cost/Schedule System*  
*Level: Medium*

12. The earned value of a project is the:

- A. Project cost to date adjusted for project scope changes
- B. Total project cost to date
- C. Cost incurred minus the planned cost
- D. Percent of the original budget that has been earned by actual work**
- E. None of these are correct

Earned value for a task is simply the percent complete times its original budget. Stated differently, EV is the percent of the original budget that has been earned by actual work completed.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Development of An Earned Value Cost/Schedule System*  
*Level: Medium*

13. The cost variance for a project is calculated by:

- A. EV-AC
- B. AC-SV
- C. PV-EV
- D. CU-EV
- E. EU-PV

See Table 13.1 on page 459.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

14. The schedule variance for a project is calculated by:

- A. EV-AC
- B. AC-SV
- C. PV-EV
- D. CU-EV
- E. EV-PV

See Table 13.1 on page 459.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

15. Baseline project budgets are derived from:

- A. The organization's overall budget
- B. Time-phasing the work packages**
- C. Top management directions
- D. Both A and C are correct
- E. A, B, and C are all correct

The earned value system starts with the time-phased costs that provide the project budget baseline, which is called the planned budgeted value of the work scheduled (PV). Given this time-phased baseline, comparisons are made with actual and planned schedule and costs using earned value. The earned value approach provides the missing links not found in conventional cost-budget systems.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

16. Of the following costs, which are not included in baseline?

- A. Materials
- B. Equipment
- C. Labor
- D. A and C but not B
- E. All of these are usually included**

The baseline (PV) is the sum of the cost accounts, and each cost account is the sum of the work packages in the cost account. Three direct costs are typically included in baselines—labor, equipment, and materials.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*



17. The method most frequently used in measuring project progress is the

- A. 0/100 percent rule
- B. 75/25 percent rule
- C. 50/50 percent rule
- D. 25/75 percent rule
- E.** Percent complete rule

This rule is the heart of any earned value system. The best method for assigning costs to the baseline under this rule is to establish frequent checkpoints over the duration of the work package and assign completion percentages in dollar terms.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Easy*

18. Generally the method for measuring accomplishments centers on comparing

- A. Earned value with the expected schedule value
- B. Earned value with the actual costs
- C. Actual costs with budgeted costs
- D.** Both A and B are correct
- E. A, B, and C are all correct

Generally the method for measuring accomplishments centers on two key computations: 1. Comparing earned value with the expected schedule value. And 2. Comparing earned value with the actual costs.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

19. Which of the following are required to assess the current status of a project using the earned-value cost/schedule system?

- A. BAC, EAC, and ETC
- B. VAC, EAC, and BAC
- C. CV, SU, and BAC
- D.** PV, EV, and AC
- E. TCPI, EV, and PV

Assessing the current status of a project using the earned value cost/schedule system requires three data elements—planned cost of the work scheduled (PV), budgeted cost of the work completed (EV), and actual cost of the work completed (AC).

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Difficult*

20. Which of the following methods of variance analysis is the best indicator of how far off the budget a project will be at completion?

- A. BAC
- B. EAC
- C. ETC
- D.** VAC
- E. TCPI

Cost variance at completion. VAC indicates expected actual over- or underrun cost at completion.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Difficult*

21. Which of the following methods will measure the cost efficiency of the work accomplished to date?

- A. SV/CV
- B. EV/PV
- C. EV/AC**
- D. AC/SV
- E. AC/CV

Cost performance index (CPI) =  $EV/AC$ .

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Difficult*

22. Which of the following methods will measure the *scheduling* efficiency of the work accomplished to date?

- A. SV/CV
- B. EV/PV**
- C. EV/AC
- D. AC/SV
- E. AC/CV

Scheduling performance index (SPI) =  $EV/PV$ .

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Difficult*

23. An index value less than one indicates that the project is

- A. Under cost or behind schedule
- B. Over cost or ahead of schedule
- C. Under cost or ahead of schedule
- D.** Over cost or behind schedule
- E. On cost or on schedule

See Table 13.3 on page 469.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Indexes to Monitor Progress*

*Level: Difficult*

24. Scope creep affects:

- A. The organization
- B. The project team
- C. The project suppliers
- D. Both A and B are correct
- E.** A, B, and C are all correct

Scope creep affects the organization, project team, and project suppliers.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Other Control Issues*

*Level: Medium*

25. Small refinements that eventually build to be major changes are known as:

- A. Project erosion
- B. Scope creep**
- C. Specification adjustments
- D. Specification refinements
- E. Continuous improvements

Large changes in scope are easily identified. It is the "minor refinements" that eventually build to be major scope changes that can cause problems. These small refinements are known in the field as scope creep.

*AACSB: Analytic  
Bloom's: Comprehension  
Learning Objective: Other Control Issues  
Level: Easy*

26. The percent complete index that looks at percent complete in terms of budgeted amounts is calculated by which of the following?

- A. EV/BAC**
- B. (EV-PV)/BAC
- C. AC/EAC
- D. (EV-AC)/BAC
- E. (EV-PV)/EAC

Percent complete index  $PCIB = EV/BAC$ .

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Indexes to Monitor Progress  
Level: Medium*

27. The percent complete index that looks at percent complete in terms of actual amounts is calculated by which of the following?

- A.  $EV/BAC$
- B.  $(EV-PV)/BAC$
- C.  $AC/EAC$**
- D.  $(EV-AC)/BAC$
- E.  $(EV-PV)/EAC$

Percent complete index  $PCIC = AC/EAC$ .

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

28. Which of the following will calculate the estimated cost to complete the project?

- A.  $(VAC-EV)/(PV/AC)$
- B.  $(BAC-EV)/(EV/AC)$**
- C.  $(PV/AC)/(VAC-EV)$
- D.  $(EV/AC)/(BAC-EV)$
- E.  $(BAC-EV)/(BAC-AC)$

A method used in large projects where the original budget is less reliable. This method uses the actual costs to date plus an efficiency index ( $CPI = EV/AC$ ) applied to the remaining project work.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Forecasting Final Project Cost*  
*Level: Difficult*

29. Which of the following will calculate the To Complete Performance Index?

- A.  $(VAC-EV)/(PV/AC)$
- B.  $(BAC-EV)/(EV/AC)$
- C.  $(PV/AC)/(VAC-EV)$
- D.  $(EV/AC)/(BAC-EV)$
- E.  $(BAC-EV)/(BAC-AC)$**

$$TCPI = (BAC-EV)/(BAC-AC).$$

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Forecasting Final Project Cost*

*Level: Difficult*

30. Which of the following is not true regarding scope creep?

- A. It is common late in projects**
- B. It is frequently unnoticed until time delays or cost overruns are observed
- C. It wears down team motivation and cohesiveness
- D. Project suppliers resent frequent changes
- E. All of these are true

Scope creep is common early in projects—especially in new-product development projects. Customer requirements for additional features, new technology, poor design assumptions, etc., all manifest pressures for scope changes. Frequently these changes are small and go unnoticed until time delays or cost overruns are observed. Scope creep affects the organization, project team, and project suppliers. Scope changes alter the organization's cash flow requirements in the form of fewer or additional resources, which may also affect other projects. Frequent changes eventually wear down team motivation and cohesiveness. Clear team goals are altered, become less focused, and cease being the focal point for team action. Starting over again is annoying and demoralizing to the project team because it disrupts project rhythm and lowers productivity. Project suppliers resent frequent changes because they represent higher costs and have the same effect on their team as on the project team.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Other Control Issues*

*Level: Difficult*

#### **Fill in the Blank Questions**

31. \_\_\_\_\_ holds people accountable, prevents small problems from mushrooming into large problems, and keeps focus.

**Control**

Control holds people accountable, prevents small problems from mushrooming into large problems, and keeps focus.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Structure of a Project Monitoring Information System*

*Level: Easy*

32. The first step in creating a project control system for measuring and evaluating project performance is to \_\_\_\_\_.

**set up a baseline plan**

See list on page 454.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: The Project Control Process*

*Level: Easy*

33. A concept of \_\_\_\_\_ is necessary to get a realistic estimate of performance against a time-phased budget.

**earned value**

Earned value is necessary to provide a realistic estimate of performance against a time-phased budget. Earned value (EV) is defined as the budgeted cost of the work performed.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: The Project Control Process*

*Level: Medium*



34. Usually status reports should take place every \_\_\_\_\_ weeks to be useful and allow for proactive correction.

**one to four**

Usually status reports should take place every one to four weeks to be useful and allow for proactive correction.

*AACSB: Analytic  
Bloom's: Comprehension  
Learning Objective: The Project Control Process  
Level: Medium*

35. Because of their easy-to-understand visual format, \_\_\_\_\_ are the most favored, used, and understandable tool used to report project status.

**Gantt charts**

Gantt and control charts serve well as a means for tracking and trending schedule performance. Their easy-to-understand visual formats make them favorite tools for communicating project schedule status—especially to top management, who do not usually have time for details.

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Monitoring Time Performance  
Level: Easy*

36. Control charts are frequently used to monitor progress toward \_\_\_\_\_, which mark events and as such have zero duration.

**milestones**

Control charts are also frequently used to monitor progress toward milestones, which mark events and as such have zero duration. Milestones are significant project events that mark major accomplishments.

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Monitoring Time Performance  
Level: Medium*

37. The \_\_\_\_\_ is a tool used to monitor past project schedule performance and current performance and to estimate future schedule trends.

**project schedule control chart**

Control charts are also frequently used to monitor progress toward milestones, which mark events and as such have zero duration.

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Monitoring Time Performance  
Level: Medium*

38. The \_\_\_\_\_ is the difference between the earned value and the actual costs for the work completed to date.

**cost variance**

Cost variance is the difference between the earned value and the actual costs for the work completed to date where  $CV = EV - AC$ .

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

39. The \_\_\_\_\_ is the difference between the earned value to date and the baseline schedule.

**schedule variance**

Schedule variance is the difference between the earned value and the baseline line to date where  $SV = EV - PV$ .

*AACSB: Analytic  
Bloom's: Knowledge  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

40. \_\_\_\_\_ is simply the percent complete, times the original budget.

**Earned value**

Earned value for a task is simply the percent complete times its original budget.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

41. The best method for assigning costs to the baseline is to establish frequent \_\_\_\_\_ over the duration of the work package.

**checkpoints**

The best method for assigning costs to the baseline under this rule is to establish frequent checkpoints over the duration of the work package and assign completion percentages in dollar terms.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

42. When measuring percent complete in the monitoring phase of the project, it is common to limit the amount earned to \_\_\_\_\_ until the work package is 100 percent complete.

**80 or 90 percent**

When measuring percent complete in the monitoring phase of the project, it is common to limit the amount earned to 80 or 90 percent until the work package is 100 percent complete.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

43. The \_\_\_\_\_ is the rule most frequently used by practicing project managers to both assign costs to the baseline and to measure progress using earned value.

**percent complete**

In practice, the integration is accomplished by using the same rules in assigning costs to the baseline as those used to measure progress using earned value. You may find several rules in practice, but percent complete is the workhorse most commonly used.

*AACSB: Analytic  
Bloom's: Reflective Thinking  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

44. Cost variance tells us if the \_\_\_\_\_ costs are more or less than was planned at any point over the life of the project.

**work accomplished**

Cost variance tells us if the work accomplished costs more or less than was planned at any point over the life of the project.

*AACSB: Reflective Thinking  
Bloom's: Comprehension  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

45. A positive variance in SV or CV indicates a \_\_\_\_\_ condition.

**desirable**

A positive variance in SV or CV indicates a desirable condition.

*AACSB: Analytic  
Bloom's: Comprehension  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

46. The units of measure for SV or CV is in terms of \_\_\_\_\_.

**dollars**

Schedule variance measures progress in dollars rather than time units.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

47. CPI and SPI are two types of indexes that measure \_\_\_\_\_.

**performance efficiency**

There are two indexes of performance efficiency. The first index measures cost efficiency of the work accomplished to date (CPI). The second index is a measure of scheduling efficiency to date (SPI).

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Indexes to Monitor Progress*

*Level: Medium*

48. The \_\_\_\_\_ indexes compare the to-date progress to the end of the project.

**percent complete**

Two project percent complete indexes are used, depending on your judgment of which one is most representative of your project. The first index assumes the original budget of work complete is the most reliable information to measure project percent complete. The second index assumes the actual costs-to-date and expected cost at completion are the most reliable for measuring project percent complete. These indexes compare the to-date progress to the end of the project.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Indexes to Monitor Progress*

*Level: Medium*

49. An SPI index of 1.22 indicates that the project is \_\_\_\_\_ schedule.  
**behind**

See Table 13.3 on page 469.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

50. Although it is very difficult to measure, measuring \_\_\_\_\_ performance is as important as measuring schedule and cost performance.  
**technical**

It is very difficult to specify how to measure technical performance because it depends on the nature of the project. Suffice it to say, measuring technical performance must be done. Technical performance is frequently where quality control processes are needed and used. Project managers must be creative in finding ways to control this very important area.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

51. The best defense against scope creep is a \_\_\_\_\_.  
**well-defined scope statement**

The best defense against scope creep is a well-defined scope statement.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Other Control Issues*  
*Level: Medium*

#### **True / False Questions**

52. The PCIB index measures the project percent complete in relation to the resources that were budgeted.

**TRUE**

The PCIB index assumes the original budget of work complete is the most reliable information to measure project percent complete. The PCIB index looks at percent complete in terms of budget amounts.

*AACSB: Reflective Thinking*  
*Bloom's: Comprehension*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

53. The PCIC index measures the project percent complete in relation to the resources that have actually been used so far on the project.

**TRUE**

The PCIC index assumes the actual costs-to-date and expected cost at completion are the most reliable for measuring project percent complete. These indexes compare the to-date progress to the end of the project. The PCIC index views percent complete in terms of actual dollars spent to accomplish the work to date and the actual expected dollars for the completed project (EAC).

*AACSB: Reflective Thinking*  
*Bloom's: Knowledge*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

54. Control is one of the most neglected areas of project management.

**TRUE**

Control is one of the most neglected areas of project management.

*AACSB: Reflective Thinking*  
*Bloom's: Knowledge*  
*Learning Objective: Structure of a Project Monitoring Information System*  
*Level: Easy*

55. Measuring performance against budget is simply a case of comparing actual versus budget.

**FALSE**

Measuring performance against budget (e.g., money, units in place, labor hours) is more difficult and is not simply a case of comparing actual versus budget.

*AACSB: Reflective Thinking*  
*Bloom's: Comprehension*  
*Learning Objective: The Project Control Process*  
*Level: Medium*

56. Earned value is defined as the budgeted cost of the work performed.

**TRUE**

Earned value (EV) is defined as the budgeted cost of the work performed.

*AACSB: Reflective Thinking*  
*Bloom's: Comprehension*  
*Learning Objective: The Project Control Process*  
*Level: Medium*

57. The baseline is derived from merging information from the work packages with the project network.

**TRUE**

The baseline is derived from the cost and duration information found in the work breakdown structure (WBS) database and time-sequence data from the network and resource scheduling decisions.

*AACSB: Reflective Thinking*  
*Bloom's: Knowledge*  
*Learning Objective: The Project Control Process*  
*Level: Difficult*



58. The network chart is the most favored, used, and understandable option for reporting project progress to upper management.

**FALSE**

The Gantt chart is the most favored, used, and understandable. This kind of chart is commonly referred to as a tracking Gantt chart. Gantt and control charts serve well as a means for tracking and trending schedule performance. Their easy-to-understand visual formats make them favorite tools for communicating project schedule status—especially to top management, who do not usually have time for details.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Monitoring Time Performance*

*Level: Medium*

59. In a project control chart, four observations trending in one direction indicate there is a very high probability that there is an identifiable cause.

**TRUE**

Four observations trending in one direction indicate there is a very high probability that there is an identifiable cause.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Monitoring Time Performance*

*Level: Medium*

60. Milestones are significant project events that mark major accomplishments.

**TRUE**

Milestones are significant project events that mark major accomplishments.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Monitoring Time Performance*

*Level: Easy*

61. The best method for assigning costs to the baseline under this rule is to establish frequent checkpoints over the duration of the work package and assign completion percentages in dollar terms.

**TRUE**

The best method for assigning costs to the baseline under this rule is to establish frequent checkpoints over the duration of the work package and assign completion percentages in dollar terms.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

62. The original earned value cost/schedule system was pioneered by the U.S. Department of Defense in the 1960s.

**TRUE**

The original earned value cost/schedule system was pioneered by the U.S. Department of Defense (DOD) in the 1960s.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

63. Earned value is calculated by taking the percent complete times the original budget.

**TRUE**

Earned value for a task is simply the percent complete times its original budget. Stated differently, EV is the percent of the original budget that has been earned by actual work completed.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Easy*

64. Baseline costs typically include labor, equipment, materials and direct overhead cost.

**FALSE**

The baseline (PV) is the sum of the cost accounts, and each cost account is the sum of the work packages in the cost account. Three direct costs are typically included in baselines—labor, equipment, and materials.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Easy*

65. Overhead costs and profit are typically included in the project baseline.

**FALSE**

Overhead costs and profit are typically added later by accounting processes.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Easy*

66. The major reasons for creating a baseline are to monitor and report progress and to estimate cash flow.

**TRUE**

The major reasons for creating a baseline are to monitor and report progress and to estimate cash flow.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Development of An Earned Value Cost/Schedule System*

*Level: Medium*

67. In calculating schedule variance and cost variance, a negative variance indicates a desirable condition, and a positive variance suggests problems.

**FALSE**

A positive variance indicates a desirable condition, while a negative variance suggests problems or changes that have taken place.

*AACSB: Reflective Thinking  
Bloom's: Comprehension  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Medium*

68. An undesirable schedule variance indicates that the project is running behind schedule.

**FALSE**

A negative schedule variance suggests problems or changes that have taken place.

*AACSB: Reflective Thinking  
Bloom's: Comprehension  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Difficult*

69. Cost variance tells us the different estimates among vendors needed to complete the project over the life of the project.

**FALSE**

Cost variance tells us if the work accomplished costs more or less than was planned at any point over the life of the project.

*AACSB: Reflective Thinking  
Bloom's: Knowledge  
Learning Objective: Development of An Earned Value Cost/Schedule System  
Level: Difficult*

70. A CPI index of 0.97 indicates that the project has spent less money than budgeted.

**FALSE**

See Table 13.3 on page 469.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Indexes to Monitor Progress*

*Level: Medium*

71. One method of estimating the costs to complete a project is to divide the work remaining by the CPI.

**TRUE**

$EAC = \text{Work remaining} / \text{CPI}$ .

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Forecasting Final Project Cost*

*Level: Difficult*

72. All scope changes that result in increased costs should be avoided.

**FALSE**

Although scope changes are usually viewed negatively, there are situations when scope changes result in positive rewards. Scope changes can represent significant opportunities. In product development environments, adding a small feature to a product can result in a huge competitive advantage. A small change in the production process may get the product to market one month early or reduce product cost.

*AACSB: Reflective Thinking*

*Bloom's: Knowledge*

*Learning Objective: Other Control Issues*

*Level: Medium*

73. *Scope Creep* refers to any significant changes made in the project once it is underway.

**FALSE**

Large changes in scope are easily identified. It is the "minor refinements" that eventually build to be major scope changes that can cause problems. These small refinements are known in the field as scope creep.

*AACSB: Reflective Thinking*  
*Bloom's: Knowledge*  
*Learning Objective: Other Control Issues*  
*Level: Medium*

74. The key to managing scope creep is change management.

**TRUE**

The key to managing scope creep is change management.

*AACSB: Reflective Thinking*  
*Bloom's: Comprehension*  
*Learning Objective: Other Control Issues*  
*Level: Easy*

75. The best defense against scope creep is accepting only major changes.

**FALSE**

The best defense against scope creep is a well-defined scope statement.

*AACSB: Reflective Thinking*  
*Bloom's: Comprehension*  
*Learning Objective: Other Control Issues*  
*Level: Easy*

76. The rule of using subjective estimated percent complete in combination with hard, tangible monitoring points works well on long-duration activities that can be broken into short discrete work packages.

**TRUE**

This is regarding percent complete with weighted monitoring gates. This more recent rule uses subjective estimated percent complete in combination with hard, tangible monitoring points. This method works well on long-duration activities that can be broken into short, discrete work packages of no more than one or two report periods.

*AACSB: Reflective Thinking*

*Bloom's: Comprehension*

*Learning Objective: Indexes to Monitor Progress*

*Level: Easy*

#### **Short Answer Questions**

77. Identify the steps in creating a control process that measure and evaluate project performance.

1. Set the baseline plan, 2. Measure the progress and performance, 3. Compare plan against actual, 4. Take action as indicated by the results.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: The Project Control Process*

*Level: Medium*

78. What is the difference between a baseline Gantt chart and a Tracking Gantt chart?

The baseline chart is created during the project planning phase and lays out the logic and timing for major activities. The tracking chart shows progress against that plan by using various graphical techniques to display progress.

*AACSB: Analytic*

*Bloom's: Comprehension*

*Learning Objective: Monitoring Time Performance*

*Level: Medium*

79. Identify and briefly describe the three percent complete rules for placing costs in baselines.

1. 0/100 percent rule; credit is earned when activity is complete and not before, 2. 50/50 percent rule; 50 percent of the value is applied when the activity is started and the other 50 percent when it is completed, and 3. Percent complete rule; frequent checkpoints are established with predetermined earned values and credit is given when those checkpoints are achieved.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

80. Conducting an earned value analysis requires three data elements. Identify the acronyms for each and describe what they are.

1. PV; budgeted cost of work scheduled, 2. EV; budgeted cost of the work performed, and 3. AC; actual cost of the work performed.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Development of An Earned Value Cost/Schedule System*  
*Level: Medium*

81. In reviewing the budget report of a project, you notice that spending on the project is running about ten percent over plan. Is the project in trouble? Why or why not?

You don't know for sure. The project may be in trouble however the cost overrun could be due to the project being ahead of schedule. You would need to have an earned value analysis run before you could tell.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Development of An Earned Value Cost/Schedule System*  
*Level: Medium*



82. Interpret the results of calculating the performance indexes based on a range of possible calculated values.

If the index is less than one then the cost is under target or the project is ahead of schedule. If the index is equal to one then either the cost or the schedule are on target. If the index is greater than one the project is overspending or behind schedule.

*AACSB: Analytic*  
*Bloom's: Synthesis*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

83. Identify the four indexes used in project management control and identify the formulas for calculating the indexes.

1) Cost Performance Index (CPI) =  $EV/AC$ , 2) Schedule Performance Index (SPI) =  $EV/PV$ , 3) Percent Complete Index (PCIB) =  $EV/BAC$ , and 4) Percent Complete Index (PCIC) =  $AC/EAC$

*AACSB: Analytic*  
*Bloom's: Synthesis*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Difficult*

84. Identify and briefly discuss the two methods to revise estimates of future project costs.

1. Revision by Experts; changes are made by experts because new information indicates that the original estimates were not accurate, usually used on small projects, and 2. Revision based on CI; changes are made by using Cost Productivity Index as a basis for reforecasting the project costs ETC.  $(BAC - EV)/(EV/AC)$ .

*AACSB: Analytic*  
*Bloom's: Synthesis*  
*Learning Objective: Forecasting Final Project Cost*  
*Level: Difficult*

85. What are Weighted Monitoring Gates and why would you need them?

Weighted Monitoring Gates work well with long duration activities that can be broken into short discrete work packages. For example, establishing monitoring gates at 30%, 50%, and 100% would serve as a check on overly optimistic estimates of work progress.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Indexes to Monitor Progress*  
*Level: Medium*

86. What is scope creep and why should a project manager be concerned about it?

Scope creep is small refinements that eventually build into a major change in the scope of the project. A project manager should be concerned in that the project was put together and the resources assembled to achieve specific objectives and while the motives can be well intended the result is that sacrifices may be required to the other two key areas of schedule and/or costs.

*AACSB: Analytic*  
*Bloom's: Comprehension*  
*Learning Objective: Other Control Issues*  
*Level: Medium*

87. Typically, project progress reports are designed and communicated in written or oral form. Identify the common topic format for such progress reports.

1. progress since last report, 2. current status of project, 3. cumulative trends, 4. problems and issues since last report, and 5. corrective action planned.

*AACSB: Analytic*  
*Bloom's: Knowledge*  
*Learning Objective: Structure of a Project Monitoring Information System*  
*Level: Difficult*

88. Briefly describe the general structure of a project monitoring information system for control.

A project monitoring system involves 1. determining what data to collect; 2. how, when, and who will collect the data; 3. analysis of the data; and 4. reporting current progress.

*AACSB: Analytic*

*Bloom's: Knowledge*

*Learning Objective: Structure of a Project Monitoring Information System*

*Level: Difficult*