EARNED VALUE ANALYSIS - EXAMPLE

QUESTION 1

A project involves the design and building of four software modules, called W, X, Y and Z respectively. The estimated effort for each of the modules is 60 days for A, 30 for B, 40 for C and 45 for D.

The organization that is undertaking the work assumes for the purpose of earned value analysis (EVA) that design takes up **30%** of the effort, coding **40%** and testing **30%**.

On the day that this EVA is conducted, the project should have been completed in full.
In fact the situation is as follows:

MODULE	ESTIMATED EFFORT	DESIGN (ACTUAL HRS)	CODE (ACTUAL HRS)	TEST (ACTUAL HRS)
A	60	25	40	not completed
B	30	15	15	15
C	40	15	not completed	not completed
D	45	10	not completed	not completed

Where actual hours are shown the task has been completed.
1. Calculate the schedule and cost variances.
2. Calculate the cost performance and schedule performance indicators.

SOLUTION:

MODULE	ESTIMATED EFFORT	ESTIMATED DESIGN HOURS	DESIGN (ACTUAL HRS)	ESTIMATED CODE HOURS	CODE (ACTUAL HRS)	ESTIMATED TEST HOURS	TEST (ACTUAL HRS)
		30%		40%		30%	
A	60	18	25	24	40	18	not completed
B	30	9	15	12	15	9	15
C	40	12	15	16	not completed	12	not completed
D	45	13.5	10	18	not completed	13.5	not completed
a PLANNED VALUE (PV)	175						
b EARNED VALUE (EV)	97.5	52.5 (All completed)		36 (only A+B completed)		9 (Only B completed)	
c ACTUAL COST (AC)	135		65		55		15
d SCHEDULE VARIANCE (SV)	-77.5	**f**	SCHEDULE PERFORMANCE INDICATOR (SPI)	0.56			
e COST VARIANCE (CV)	-37.5	**g**	COST PERFORMANCE INDICATOR (CPI)	0.72			

CALCULATIONS:

a: **Planned Value (PV)**: Sum of Estimated Effort = A + B + C + D

= 60 + 30 + 40 + 45

= 175

b: **Earned Value (EV):** [Total modules completed] x [% of completed module]

        = [175 x (% Design completed)] + [90 x (% Code completed)] + [30 x (% Test completed)]

        = [175 x (30/100)] + [90 x (40/100)] + [30 x (30/100)]

        = 52.5 + 36 + 9

        = 97.5

c: **Actual Cost (AC):**   Actual Hours = Total Design + Total Code + Total Test

                                                   = 65 + 55 + 15

                                                   = 135

d: **Schedule Variance (SV):**   SV = EV − PV

                                                   = 97.5 − 175

                                                   = -77.5

e: **Cost Variance (CV):**   CV = EV − AC

                                                   = 97.5 − 135

                                                   = -37.5

f: **Schedule Performance Indicator (SPI):**   SPI = EV ÷ PV

                                                   = 97.5 ÷ 175

                                                   = 0.56

g: **Cost Performance Indicator (CPI):**   CPI = EV ÷ AC

                                                   = 97.5 ÷ 135

                                                   = 0.72