10.6 Project management

Name: _____ Class: _____ Date: _____ **Total: 15 marks**

KEY WORDS critical path • earned value analysis

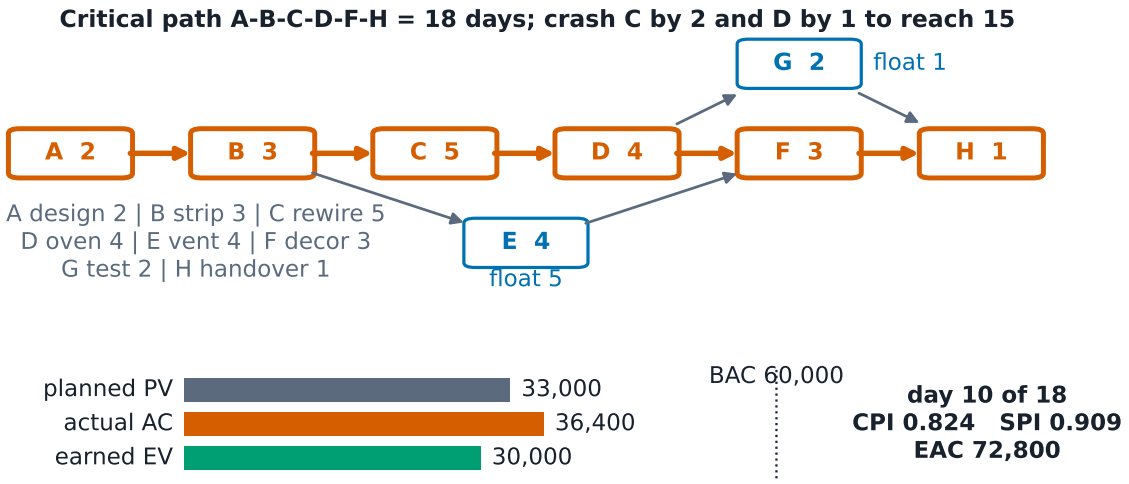
Objective

Run the forward and backward pass, find floats, crash where it pays, and read earned value.

1 Key knowledge and worked examples

■ CPM and EVM

Forward pass gives ES/EF; backward gives LS/LF; float $= LS - ES$. Crash only critical activities, only below the value of a day. $CPI = EV/AC$, $SPI = EV/PV$, $EAC = BAC/CPI$.



The critical path is the project

■ Worked example. The fit-out

A-B-C-D-F-H = 18 days ✓; floats E 5, G 1; crash C by 2 and D by 1 to 15 for net +700 ✓. CPI 0.824, SPI 0.909, EAC 72,800 ✓.

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2 Practice

A launch project: A 3 days; B 4 after A; C 6 after A; D 2 after B; E 5 after B and C; F 3 after D and E.

2.1 Forward pass: the project duration and the critical path. [4]

2.2 Total float of B and of D. [3]

2.3 C can be crashed 2 days at 300 a day, E 1 day at 500 a day; a day saved is worth 450. Which crashes pay, the new duration, and the net gain. [4]

2.4 BAC 40,000. At the status date PV 22,000, AC 25,000, EV 20,000. CPI, SPI and EAC. [4]

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Solutions

2.1

- A 0-3; B 3-7; C 3-9; D 7-9; E 9-14; F 14-17.
- Duration 17 days; critical path A-C-E-F $= 3 + 6 + 5 + 3$.

2.2

- B: LF 9 (E must start at 9), EF 7 - float 2.
- D: LF 14, EF 9 - float 5.

2.3

- C by 2 at $300 < 450$: yes - 15 days; A-B-E-F is now also 15.
- E at $500 > 450$: no. Net $2 \times 450 - 600 = +300$.

2.4

- $CPI = 20{,}000/25{,}000 = 0.80$; $SPI = 20{,}000/22{,}000 = 0.91$.
- $EAC = 40{,}000/0.80 = 50{,}000$ - a 10,000 overrun flagged now.