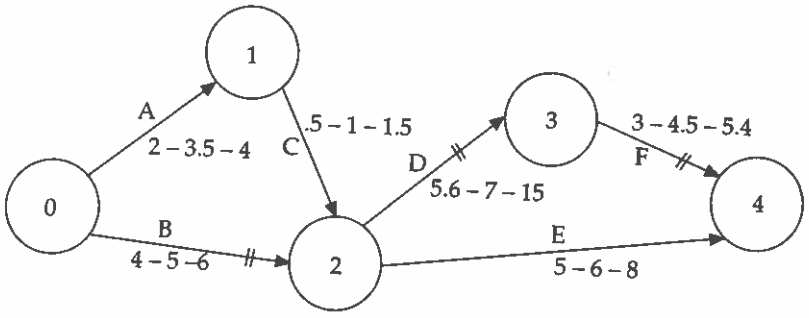
For example:




Scheduled date for completion Week 19

**Figure 23/7**

Critical path (B, D, F) expected duration

$$B = \frac{4 + 6 + 4(5)}{6} = 5 \text{ weeks}$$

$$D = \frac{5.6 + 15 + 4(7)}{6} = 8.1 \text{ weeks}$$

$$F = \frac{3 + 5.4 + 4(4.5)}{6} = \underline{4.4}$$

$$\underline{17.5}$$

If the critical activities were to occur at their optimistic times, event 4 would be reached in 12.6 weeks but if the critical activities occurred at their pessimistic times, event 4 would be reached in 26.4 weeks. As these durations span the scheduled date of week 19 some estimate of the probability of achieving the schedule date must be calculated, as follows.

a) Make an estimate of the Standard Deviation for each of the critical activities. If no additional information is available the following PERT formula can be used.

$$\frac{\text{Pessimistic time} - \text{Optimistic time}}{6}$$

i.e. Standard Deviation

$$\text{Activity B} = \frac{6 - 4}{6} = 0.33$$

$$\text{Activity D} = \frac{15 - 5.6}{6} = 1.57$$

$$\text{Activity F} = \frac{5.4 - 3}{6} = 0.4$$

b) Find the standard deviation of event 4 by calculating the statistical sum (the square root of the sum of the squares) of the standard deviations of all activities on the critical path.

$$\text{i.e. Standard Deviation of Event 4} = \sqrt{0.33^2 + 1.57^2 + 0.4^2}$$

$$= 1.65 \text{ weeks}$$