

4. All the principles necessary to crash networks have already been covered and the following points may save time in an examination.
- a) Only critical activities affect the project duration so take care not to crash non-critical activities.
 - b) The minimum possible project duration is not necessarily the most profitable option. It may be cost effective to pay some penalties to avoid higher crash costs.
 - c) If there are several independent critical paths then several activities will need to be crashed simultaneously. If there are several critical paths which are not separate i.e. they share an activity or activities, then it may be cost effective to crash the shared activities even though they may not have the lowest cost slopes.
 - d) Always look for the possibility of *increasing* the duration of a previously crashed activity when subsequent crashing renders it non-critical, i.e. it has float.

Summary

5. a) Cost analysis of networks seeks the cheapest ways of reducing project times.
- b) The crash cost is the cost associated with the minimum possible time for an activity, which is known as the *crash time*.
- c) The average cost of shortening an activity by one time period (day, weeks etc) is known as the *cost slope*.
- d) Least cost scheduling finds the cheapest method of reducing the overall project time by reducing the time of the activity on the critical path with the lowest cost slope.

Points to note

6. a) The total project cost includes *all* activity costs not just those on the critical path.
- b) The usual assumption is that the cost slope is linear. This need not be so and care should be taken not to make the linearity assumption when circumstances point to some other conclusion.
- c) The example used in this chapter includes increasing the time of a subcritical activity, which has already been crashed, so saving the extra costs incurred. Always look for such possibilities.
- d) Dummy activities have zero slopes and cannot be crashed.

Self review questions *Numbers in brackets refer to paragraph numbers*

- 1 What is the objective of network cost analysis? (2)
- 2 What are 'normal' costs and 'crash' costs? (2)
- 3 What is the basic rule of least cost scheduling? (3)