

SWANSEA INSTITUTE OF HIGHER EDUCATION

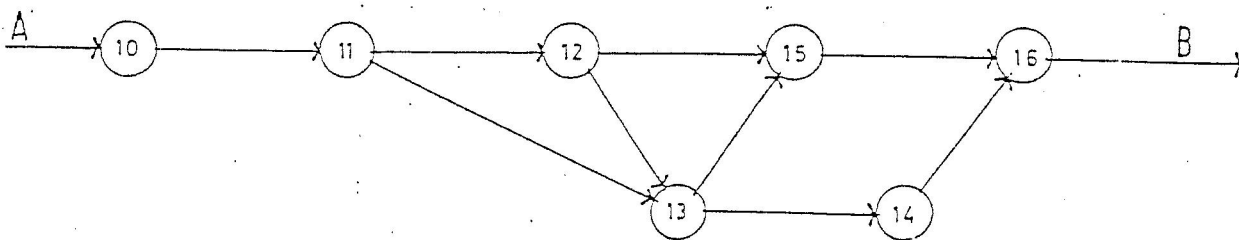
FACULTY OF APPLIED DESIGN & ENGINEERING
(BUILT & NATURAL ENVIRONMENT)

EXAMPLE 1

The total cost of a construction activity may be considered to comprise elements of both direct cost and indirect cost.

- (a) Define these elements and explain how they interact to give the total cost of the project.
- (b) A network diagram for part of a construction project is shown in Figure 1, together with details of both "normal" and "crash" durations and costs for the activities. The earliest finish time for activity A is day 35. The indirect costs attributable to the portion of the project between activities A and B have been calculated at £40 per day.
 - (i) Determine the total cost of the work represented between the completion of activity A and the commencement of activity B under "normal" conditions.
 - (ii) A change in design may make it necessary to complete activity B by day 71. Use the time/cost optimisation technique to determine the most economical way to achieve this objective and the resulting total cost.

Figure 1.



Activity	Normal		Crash	
	Duration (days)	Direct Cost (£)	Duration (days)	Direct Cost (£)
10,11	0	0	0	0
11,12	8	420	6	560
11,13	16	800	12	1160
12,13	12	1000	8	1200
12,15	18	1080	14	1200
13,14	8	1000	2	1100
13,15	10	300	8	480
14,16	6	300	6	300
15,16	14	1200	12	1500