Development of a new deluxe version of a particular toy is being considered by T-O-Y Inc. The activities necessary for the completion of this project along with the relevant information for each activity are listed in the following table. The Total Crash Time represents the time for that activity after it has been crashed the maximum crash time allowed for that activity. For example, we can reduce the time for Activity A to 3 weeks after crashing it.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Activity** | **Total Normal Time (Weeks)** | **Total Crash Time (Weeks)** | **Total Normal Cost** | **Crash Cost per period** | **Immediate Predecessors** |
| A | 4 | 3 | $2,000 | $600 | -- |
| B | 2 | 1 | 2,200 | $800 | -- |
| C | 3 | 3 | 500 | $0 | -- |
| D | 8 | 4 | 2,300 | $750 | A |
| E | 6 | 3 | 900 | $100 | B |
| F | 3 | 2 | 3,000 | $1,200 | C |
| G | 4 | 2 | 1,400 | $300 | D,E |

a) Using the normal time, what is the critical path, the project completion time, the total time required to complete all of the activities, and the slack time for each path?

b) If you wish to reduce the time required to complete this project by one week, which activity should be crashed, and how much will this increase the total cost?

c) What is the maximum time that can be crashed? How much would the total cost increase?

**d) Let’s return to the results found in a). Suppose the company believes that reducing the project completion time from the time reported in part a), will help the company realize an additional $500 per week in revenue. How many weeks should the company reduce the project completion time and what is the resulting cost of the project considering the additional revenue as an offset to the cost associated with crashing the project? The company is interested in selecting the path that minimizes the cost of the project.**