**Problem 1**

1. Find the earliest and latest start and finish times, and the slack for each activity.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Activity | Time | ES | EF | LS | LF | Slack |
| A | 3 | 0 | 3 | 0 | 3 | 0 |
| B | 2 | 3 | 5 | 6 | 8 | 3 |
| C | 5 | 3 | 8 | 3 | 8 | 0 |
| D | 8 | 8 | 16 | 8 | 16 | 0 |
| E | 4 | 8 | 12 | 12 | 16 | 4 |
| F | 2 | 16 | 18 | 16 | 18 | 0 |

1. Critical path: A-C-D-F
2. The earliest completion time is 18
3. Let be the finish time of activity i, where

Objective:

Constraints:

**Problem 2**

2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Activity | Time | ES | EF | LS | LF | Slack |
| A | 3 | 0 | 3 | 0 | 3 | 0 |
| B | 4 | 3 | 7 | 3 | 7 | 0 |
| C | 4 | 3 | 7 | 7 | 11 | 4 |
| D | 3 | 3 | 6 | 5 | 8 | 2 |
| E | 3 | 6 | 9 | 8 | 11 | 2 |
| F | 4 | 7 | 11 | 7 | 11 | 0 |
| G | 6 | 7 | 13 | 10 | 16 | 3 |
| H | 5 | 11 | 16 | 11 | 16 | 0 |
| I | 6 | 16 | 22 | 16 | 22 | 0 |
| J | 4 | 11 | 15 | 18 | 22 | 7 |
| K | 2 | 6 | 8 | 20 | 22 | 14 |
| L | 6 | 22 | 28 | 22 | 28 | 0 |

1. A-B-F-H-I-J-L