**Ain Shams University**
**Faculty of Engineering**
**Design & Prod. Engineering Dept.**

**Project Management**
**3rd Year Mechatronics**
**2006**

**SHEET NO (1)**

# *Project Networking (CPM)*

1 - Using the critical path method (CPM) determine the following for the problem specified below :
a) Project duration and the critical path.
b) free slack and total slack for all activities.

| job | Immediate predecessor | job time |
|---|---|---|
| A | -- | 2 |
| B | A | 3 |
| C | B | 3 |
| D | B | 1 |
| E | F,C,D | 2 |
| F | A | 5 |

2 - Given the following information:

| job | Immediate predecessor | job time |
|---|---|---|
| A | -- | 4 |
| B | A | 1 |
| C | A | 2 |
| D | B,C | 5 |
| E | B,D | 3 |
| F | C | 8 |
| G | E,D,F | 2 |

Determine the critical path, completion time of the project.

3 - A research and development is developing a new power supply for a console television set. It has broken the job down into the following elements:

| job | description | predecessor | time (days) |
|---|---|---|---|
| A | Determine the output voltage | ---- | 5 |
| B | Determine weather to use solid state rectifiers | A | 7 |
| C | Choose rectifiers | B | 2 |
| D | Choose filter | B | 3 |
| E | Choose transformer | C | 1 |
| F | Choose chassis | D | 2 |
| G | Choose rectifier mounting | C | 1 |
| H | Lay out the chassis | E , F | 3 |
| I | Build and test | G , H | 10 |

- Draw a critical path scheduling arrow diagram, indicating the critical path.
- What is the minimum completion time of the project?

4 - Using the critical path method (CPM), determine the following for the problem specified below:
(a) Critical path.
(b) Earliest completion time.

| Job | Immediate predecessor | Activity time |
|---|---|---|
| A | _ | 2 |
| B | _ | 1 |
| C | A | 3 |
| D | A, B | 2 |
| E | C, D | 1 |
| F | B, D | 3 |
| G | E, F | 1 |

5 - Given the following information:

| Job | Immediate predecessor | Activity time |
|---|---|---|
| A | _ | 160 |
| B | A | 30 |
| C | A | 20 |
| D | A | 60 |
| E | B, C, D | 10 |
| F | B, C, D | 20 |
| G | E, F | 10 |

(a) Find the critical path.