# Network Diagram Assignment

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1. Consider the following project activity

| *Activity Code* | *Activity Description* | *Immediate Predecessor Activity* | *Estimated Duration (Weeks)* |
|---|---|---|---|
| A | Finalise package design | – | 2 |
| B | Set up packaging equipment and procure raw materials | A | 8 |
| C | Produce the first batch | – | 12 |
| D | Package the first batch | B, C | 4 |
| E | Set up the sales office | – | 4 |
| F | Recruit salesmen | E | 4 |
| G | Train salesmen | F | 6 |
| H | Select retailers | E | 8 |
| I | Sell to retailers | G, H | 3 |
| J | Despatch to retailers | D, J | 5 |
| K | Select advertising agency | E | 4 |
| L | Plan advertisement campaign | K | 9 |
| M | Release pre-launch advertisements | L | 1 |
| N | Conduct advertisement campaign | J, M | 4 |

a) Draw the Activity on arrow diagram(ADM)
b) Find the possible path of diagram
c) Identify the critical path of diagram
d) What is the minimum duration to complete this project
e) Identify the critical and non-critical activities.

2. Consider the following project activities.

| 3. Activity | Predecessor | Duration |
|---|---|---|
| A | - | 3 |
| B | - | 5 |
| C | A | 2 |
| D | A,B | 5 |

a) Draw the Activity on arrow diagram(ADM) using dummy activity.
b) Identify the critical path of diagram using forwarded and back warded method .
c) What is the minimum duration to complete this project
d) Identify the critical and non-critical activities.

3. You have to manage a project with activities and their respective durations as listed in Table below

| Activity | Immediate Predecessor | Duration (months) |
|---|---|---|
| A | None | 2 |
| B | A | 4 |
| C | A | 2 |
| D | B | 2 |
| E | B, C | 4 |
| F | A, E | 6 |
| G | D | 4 |
| H | D, E, F | 2 |
| I | G, H | 6 |
| J | H, F | 6 |
| K | H, I, J | 4 |

NODE

| ES | duration | | EF |
|---|---|---|---|
| | Activity | | |
| LS | Float | span | LF |

1. ES earliest start,
2. EF-earliest finish
3. LF-latest start a
4. LS-latest finish

a) Construct a precedence diagram(PDM) to analyze your project with earliest start, earliest finish latest start and latest finish of task.
b) What Is a minimum duration to Complete this project?
c) Show the critical path of your diagram
d) Identify the critical activity in project.
e) Identify non critical activity
f) When is the earliest time that activity D can possibly be completed?
g) What is the free float for activity E with respect to activity H?

4. The following Example indicates details of activities of a construction project. If the management want to calculate expected time under three possible time scenarios i.e. optimistic, most likely and pessimistic time, how do you calculate the expected time for the project?

| Activity | Immediate Predecessor | Optimistic Time (a) | Most likely Time (m) | Pessimistic Time = (b) | Expected Time $te = \frac{a+4m+b}{6}$ |
|---|---|---|---|---|---|
| A | - | 03 | 04 | 05 | |
| B | A | 01 | 02 | 03 | |
| C | A | 02 | 03 | 04 | |
| D | C | 01 | 02 | 03 | |
| E | A | 03 | 05 | 07 | ? |
| F | C | 04 | 05 | 12 | |
| G | B,D | 05 | 04 | 11 | |
| H | E | 92 | 04 | 06 | |
| I | F,G | 02 | 03 | 04 | |
| J | H.I | 04 | 06 | 08 | |

a) Draw the Activity on arrow diagram(ADM)
b) Find the possible path of diagram
c) Identify the critical path of diagram
d) What is the minimum duration to complete this project
e) Identify the critical and non-critical activities.