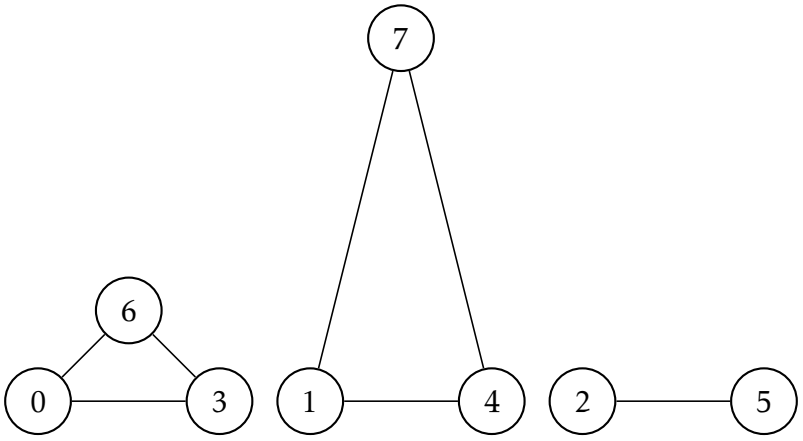
Networks and Flows on Graphs[1]

Final Exam

Duration of the exam : 1h30
No documents are allowed
Only *non-programmable* pocket calculators are allowed
Exercises can be done independently.

Exercise 1.

Using Floyd-Warshall's algorithm, compute all minimal paths between any two pairs of vertices of the following graph. Could we look for all maximal paths between any such pairs?



Exercise 2.

A project is described by the following dependancy table

[1] Head of course : P. Siarry.

Label of task	Requirements before task starts	Time (in days)
A		10
B		15
C	A finished, B finished since 3 days	11
D	A finished since 7 days	7
E	A started since 16 days, B finished	9
F	B finished since 2 days	14
G	D finished, C finished since 1 day	7
H	E finished	12
I	E finished since 6 days	8

1. Draw the MPM (Meta Potential Model) graph of this project planning problem.
2. Using relevant algorithms, give earliest scheduling dates.
   - What is the minimum amount of time the project needs to be done?
   - What are the critical tasks?
   - Represent project scheduling as a Gantt diagram.
3. Using relevant algorithms, give latest scheduling dates.
   - Compute margins and free margins of non-critical tasks?