Gantt Chart and Resource Histogram

A project is being planned using Project Network Techniques, and the network diagram attached as **Figure 1a** has been prepared to show the sequence of logic. The duration of each activity is shown in the standard position, quoted in weeks. Lags with durations also given in weeks are shown applied to three dependencies.

(a) Complete the network diagram by adding the full analysis of start and finish times (early and late), and total float in the appropriate places.

(b) Indicate the critical path on the diagram.

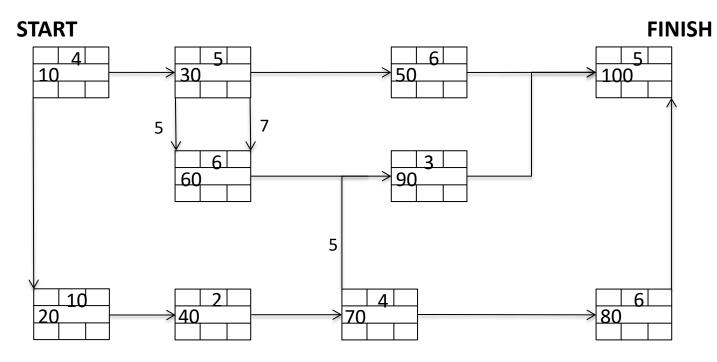Some of the activities have a resource "Mechanic" allocated as in the following table:

Activity	Resource Allocation – Resource: "Mechanic" (Number Allocated)
40	8
50	6
70	4
80	6

All other activities have zero Resource "Mechanic" allocation.

(c) Using the blank sheet **Figure 1b** provided, draw a Gantt Chart for this project showing Total Float. Below the Gantt Chart draw a histogram showing the total requirement for Resource "Mechanic".

(d) Resource "Mechanic" has to be smoothed/levelled to a maximum availability of 10. Draw on your completed **Figure 1b** how both the Gantt Chart and Histogram would alter in this levelling operation. The project must be completed in the shortest possible Total Project Time given the resource level constraint, and the logical sequence of activities must not change.

Figure 1a Network Diagram

START   **FINISH**

	4			5			6			5	
10			30			50			100		

5   7

	6			3	
60			90		

5

	10			2			4			6	
20			40			70			80		

All durations are shown in weeks.

Figure 1b   Gantt Chart/Histogram

Activity label	Weeks
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	
Resources (Note scale)	20 ... 10 ...