

招生學年度	九十九	招生類別	碩士班
系所班別	運籌管理研究所碩士班		
科目	作業研究		
注意事項	本考科可使用掌上型計算機		

Problem 1 (15%)

A professor has been contacted by four not-for-profit agencies who are willing to work with student consulting teams. The agencies need help with such things as budgeting, information systems, coordinating volunteers, and forecasting. Although each of the four student teams could work with any of the agencies, the professor feels that there is a difference in the amount of time it would take each group to solve each problem. The professor's estimate of the time, in days, is given in the table below. Develop a network model and formulate a LP model in order to minimize the sum of times used by the four teams.

Team	Projects			
	Budgeting	Information	Volunteers	Forecasting
A	32	35	15	27
B	38	40	18	35
C	41	42	25	38
D	45	45	30	42

Problem 2 (15%)

Consider the following linear program:

$$\begin{aligned}
 &\text{Maximize } z = 6u + 3v \\
 &\text{s.t.} \\
 &u + 2v \geq 10 \\
 &2u + v \leq 20 \\
 &u - v \leq 10 \\
 &-u + v \leq 2 \\
 &u, v \geq 0
 \end{aligned}$$

- Graphically display the feasible area in the (u, v) space
- Compute and show the coordinates of all feasible corner points.
- Show isoprofit lines passing through each of the corner points and show the optimal solution on the graph.

Problem 3 (20%)

A professor sits in his plush office and patiently answers questions from his students the afternoon before the final exam. His class is a mass lecture of 350 students, so he keeps socialization to a minimum and concentrates on providing explanations as quickly as possible. On average, he can answer 60 questions an hour and students

