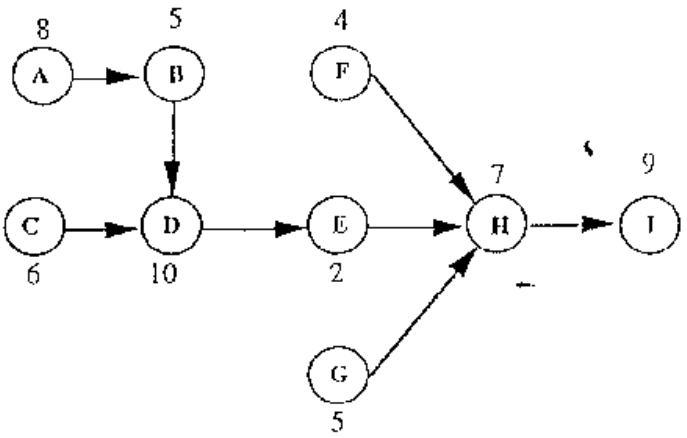
國立中央大學八十六學年度碩士班研究生入學試題卷

1. Explain the following terms (5 points per term, 45 points totally):
   - Benchmarking
   - Quality Circle
   - Delphi Method
   - CRAFT
   - GT
   - SPC
   - Producer Risk
   - Pareto Analysis
   - Sequential Decision Tree

2. (10 pts) There are three basic types of layouts: **process, product,** and **fixed position.** Please explain each one of them.

3. (10 pts) Give the following precedence diagram and task times (in minutes) for a assembly product, please balance the assembly line using a **ranked position weight method** assuming the cycle time is 19.2 minutes?



4. (10 pts) Given the following data, use **exponential smoothing method** ($\alpha = 0.2$) to develop a demand forecast. Assume the forecast for the initial period is 5.

Period	1	2	3	4	5	6
Demand	7	9	5	9	13	8

5. (12 pts) Consider the following decision table for three product decisions (A, B, and C) and three future market conditions (payoffs = $ millions).

	MARKET CONDITIONS		
DECISION	1	2	3
A	$1.0	$2.0	$0.5
B	0.8	1.2	0.9
C	0.7	0.9	1.7

Determine the best decision using the following decision criteria (You need to show the solution process) .

1. Maximax
2. Maximin
3. Minimax regret
4. Expected value; $p(1)=0.3$, $p(2) = 0.5$, $p(3) = 0.2$

6. (13 pts) Twenty samples of n = 200 were taken at an inspection station between two crucial workstations in a production process. The number of defective items in each sample were recorded as follows.

Sample	Defective	p	Sample	Defective	p
1	12	0.060	11	16	0.080
2	18	0.090	12	15	0.075
3	10	0.050	13	13	0.065
4	15	0.075	14	16	0.080
5	16	0.080	15	18	0.090
6	19	0.095	16	17	0.085
7	17	0.085	17	18	0.090
8	12	0.060	18	20	0.100
9	11	0.055	19	21	0.105
10	14	0.070	20	22	0.110

Management wants to develop p-chart based on these data that assigns 95 percent (2-sigma limits) of the variability to random causes. Set up the **p-chart** and plot the observations to determine if the process was out of control at any point.