※ 考生請注意：本試題 ☑可 ☐不可 使用計算機

1. (10%) Understanding the customer service package enables management to identify ways to gain competitive advantage in the marketplace. What do you consider to be the components of the customer service package in the provision of an airline flight? Please plan an operation strategy accordingly.

2. (15%) Information concerning a project is given in the following table. Indirect project costs amount to $250 per day. The company will incur a $100 per day penalty for each day the project lasts beyond day 14.

Activity	Normal Time (days)	Normal Cost ($)	Crash Time (days)	Crash Cost ($)	Immediate Predecessor(s)
A	5	1,000	4	1,200	None
B	5	800	3	2,000	None
C	2	600	1	9,00	A,B
D	3	1,500	2	2,000	B
E	5	900	3	1,200	C,D
F	2	1,300	1	1,400	E
G	3	900	3	9,00	E
H	5	500	3	9,00	G

(a) What is the project's duration if only normal times are used?
(b) What is the minimum-cost schedule?
(c) What is the critical path for the minimum-cost schedule?

3. (12%) Please describe the following analysis tools for process analysis, and given an example for each of them:
(a) Flowchart
(b) Process Chart
(c) Pareto Chart
(d) Cause-and-Effect Diagram

4. (13%) Please briefly discuss the following terminology:
(a) Comparison of TQM and BPR
(b) Six Sigma improvement model.
(c) ISO Standards

(背面仍有題目,請繼續作答)

※ 考生請注意：本試題 ☑可 ☐不可 使用計算機

5. (15%) Explain the following three terms in the discipline of production and operations management:
   (a) (5%) Critical Ratio
   (b) (5%) Slack per remaining operations
   (c) (5%) cross-docking
6. (10%) Distinguish the push and pull methods. Name at least two characteristics of a process with which a firm will adopt a push method.
7. (10%) Consider the following inventory models: (i) basic economic order quantity, (ii) production order quantity, (iii) quantity discount model. Which of the above inventory models are suitable for independent demand? And why (or why not)?
8. (15%) When scheduling n jobs for a two-station flow shop, we might consider Johnson's rule in order to minimize the makespan. Please answer the following questions.
   (a) (8%) Describe the procedure of Johnson's rule for the jobs which have deterministic processing times at each workstation and have the same processing sequence. Without loss of generality, the processing sequence is station 1 and then station 2.
   (b) (7%) Continuing from (a), suppose that we obtain a schedule by using Johnson's rule and follow this schedule to process the jobs. Now consider the case that when processing the kth job ($k < n$) at station 1, you find that the processing time of the kth job at station 1 is unexpectedly increased to a certain amount. Please describe a procedure at this moment that will minimize the makespan in the presence of the unexpected instance.