1. (10 points) Suppose your company is trying to promote a Six Sigma program which is known as a quality improvement process. Your superior is asking you what a Six Sigma program is, what its basic ideas are, and why it becomes so popular in recent years. How would you answer him/her?

2. (6 points) What are the three elements of the Juran trilogy?
Ans: Quality planning, Quality control and quality improvement.

3.
(a) (5 points) Explain type I and type II errors relative to the control chart.
(b) (6 points) Being a quality engineer, suppose you are asked to re-design a given control chart. What you could do if you want to:
   (i) reduce type I error;
   (ii) reduce type II error;
   (iii) reduce **both** type I and type II errors at the same time?

4. (6 points) Differentiate between the purpose of an operation process chart and the purpose of a flow process chart.
5. 11%
欢迎您参加本次考试，请简述您对“工业工程与管理”这门课程的了解。

6. 11%
胜利石油公司正准备拟定下个月的运输计划。ABCD 四市的需求分别为 50、
70、30,60 万吨。这些油可以由 XYZ 三厂送来其产量分别为 100, 60, 50 万
吨。X 厂至 ABCD 四市每桶的运费分别为 16, 13, 22, 17 元。Y 厂至 ABCD
四市每桶的运费分别为 14, 13, 19, 15 元。Z 厂至 ABCD 三市每桶的运费分别
为 19, 20, 23 元。以运输问题(transportation problem)的方法求解。画出各步
骤的计算表格。

7. 12%
设施规划时，分析各种生产产品的数量，与所需设备及加工制造程序，概
分为下列四组布设策略，分别叙述其应用之适用性及优缺点，
a. 5% 产品别布置
b. 5% 程序别布置
c. 5% 服务别布置
d. 5% 固定别布置

8. 18%
假设甲公司对某原料之年需求量为 D，每次订货成本为 S，每单位持有成
本(per year)为 H，每次订购量为 Q
(a) 年度持有成本为？(年度持有成本 = 平均库存量×单位持有成本)(5%)
(b) 年度订货成本为？(年度订货成本 = 年订货次数×每次订货成本)(5%)
(c) 假设总持有成本为年度持有成本及年度订货成本之和，试算出甲公司之
经济订货批量(Economic Order Quantity, EOQ)。(8%)

9. 15%
何谓 Make-to-stock 及 Make-to-order？请说明此两种生产型态之优缺点及您认
为适用的产业？(15%)