

1. There are at least two integrative, balanced approaches to organizational effectiveness, which are the **stakeholder** (also called the constituency approach)(Anne S. Tusi, 1990; Charles Fombrun and Mark Shanley, 1990; Terry Connolly, Edward J. Conlon, and Stuart Jay Deutsch, 1980) and **competing values** approaches (Robert E. Quinn and John Rohrbaugh, 1983). Please describe each of these approaches, and explain the similarities and differences between them. (30%, Answer your question in English)

2. The **garbage can model** (Michael D. Cohen, James G. March, and Johan P. Olsen, 1972; Michael D. Cohen and James G. March, 1974) is one of the most interesting descriptions of organizational decision processes. Please describe the four streams of events in the garbage can model of decision making. Why are they considered to be independent? (20%, You are allowed to answer your question either in English or Chinese)

3. How do evolutionary change and revolutionary change differ? Under what conditions might managers choose one approach or the other? Give an example for each situation. (25%, You are allowed to answer your question either in English or Chinese)

4. What is organizational learning? In what ways can managers promote the development of organizational learning by acting at individual level, group level, organizational level, and interorganizational level? (25%, You are allowed to answer your question either in English or Chinese)

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1. Let X be a discrete random variable with possible values $1, 2, 3, \dots, n$, all equally likely. Find $E(X)$ and $Var(X)$. (10 分)
2. Let X and Y be two independent random variables with the following p.d.f.'s: $f_X(x) = e^{-x}, x > 0$; $f_Y(y) = e^{-y}, y > 0$.
Define $Z = X + Y$,
 - (a) Find the probability distribution of Z , $F(z) = P(Z \leq z)$ (5 分)
 - (b) the conditional p.d.f. of X given Z , $f_{X|Z}(x|z)$ (5 分)
3. 某試卷有 100 題是非題，每題一分，80 分及格。每一題答案都用猜的話，請估計會猜及格的機率是多少？(用中央極限定理) (10 分)
4. 隨機抽樣 40 份的某商店交易紀錄，平均每一筆交易 $\bar{x} = 121$ 元，標準差 $s = 10.2$ 元。用 $\alpha = 0.05$ 來檢測平均交易不到 125 元的說法。(10 分)
5. 從常態分配的母體隨機抽樣，樣本數 $n = 9$ ，其平均數 $\bar{x} = 8.3$ ，標準差 $s = 1.2$ 。
 - (a) 求母體平均數 μ 的 95% 信賴區間。(5 分)
 - (b) 由這信賴區間直接檢驗 $H_0: \mu = 8.5$ 與 $H_1: \mu \neq 8.5$ ， $\alpha = 0.05$ 。(5 分)
6. 試說明樣本平均值(\bar{X})之抽樣分配(包含常態與非常態兩種情況)。(10 分)
7. 請舉例說明簡單隨機抽樣、分層隨機抽樣、系統抽樣、與群聚抽樣，並比較此四種隨機抽樣方法之優缺點。(10 分)
8. 某一企業專題研究中，欲分析不同地區(台北、台中、台南)下廣告量對某產品銷售量的影響，試寫出完整的統計分析模式。(10 分)
9. 在有重複的 Two-way ANOVA 中，請回答下各題(每小題 5 分，共計 15 分)
 - (a) 請寫出統計模式。
 - (b) 請寫出完整的 ANOVA 表。
 - (c) 請繪製一交互作用(Interaction)圖例來表示兩因子間無交互作用的情況。
10. 在簡單迴歸分析中(共計 5 分)
 - (a) 請繪製期望預測值的信賴區間圖。(2 分)
 - (b) 何種情況下信賴區間為最短距離?(1 分)
 - (c) 上述信賴區間提供何種意涵?(2 分)

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TABLE III
The Normal Distribution

$$\Pr(X \leq x) = \Phi(x) = \int_{-\infty}^x \frac{1}{\sqrt{2\pi}} e^{-t^2/2} dt$$

$$[\Phi(-x) = 1 - \Phi(x)]$$

x	$\Phi(x)$	x	$\Phi(x)$	x	$\Phi(x)$
0.00	0.500	1.10	0.864	2.05	0.980
0.05	0.520	1.15	0.875	2.10	0.982
0.10	0.540	1.20	0.885	2.15	0.984
0.15	0.560	1.25	0.894	2.20	0.986
0.20	0.579	1.282	0.900	2.25	0.988
0.25	0.599	1.30	0.903	2.30	0.989
0.30	0.618	1.35	0.911	2.326	0.990
0.35	0.637	1.40	0.919	2.35	0.991
0.40	0.655	1.45	0.926	2.40	0.992
0.45	0.674	1.50	0.933	2.45	0.993
0.50	0.691	1.55	0.939	2.50	0.994
0.55	0.709	1.60	0.945	2.55	0.995
0.60	0.726	1.645	0.950	2.576	0.995
0.65	0.742	1.65	0.951	2.60	0.995
0.70	0.758	1.70	0.955	2.65	0.996
0.75	0.773	1.75	0.960	2.70	0.997
0.80	0.788	1.80	0.964	2.75	0.997
0.85	0.802	1.85	0.968	2.80	0.997
0.90	0.816	1.90	0.971	2.85	0.998
0.95	0.829	1.95	0.974	2.90	0.998
1.00	0.841	1.960	0.975	2.95	0.998
1.05	0.853	2.00	0.977	3.00	0.999

TABLE IV

The t-Distribution*

$$\Pr(T \leq t) = \int_{-\infty}^t \frac{\Gamma[(r+1)/2]}{\sqrt{r\pi} \Gamma(r/2) (1 + w^2/r)^{-(r+1)/2}} dw$$

$$[\Pr(T \leq -t) = 1 - \Pr(T \leq t)]$$

r	$\Pr(T \leq t)$				
	0.90	0.95	0.975	0.99	0.995
1	3.078	6.314	12.706	31.821	63.657
2	1.886	2.920	4.303	6.965	9.925
3	1.638	2.353	3.182	4.541	5.841
4	1.533	2.132	2.776	3.747	4.604
5	1.476	2.015	2.571	3.365	4.032
6	1.440	1.943	2.447	3.143	3.707
7	1.415	1.895	2.365	2.998	3.499
8	1.397	1.860	2.306	2.896	3.355
9	1.383	1.833	2.262	2.821	3.250
10	1.372	1.812	2.228	2.764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.055
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
30	1.310	1.697	2.042	2.457	2.750

*This table is abridged from Table III of Fisher and Yates: *Statistical Tables for Biological*

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1. Consumer choice (每小題5分)

- (1) Suppose Novia's income elasticity of demand for food is 0.5 and her price elasticity of demand is -1.0. Suppose also that Novia spends \$10,000 a year on food, that the price of food is \$2, and that her income is \$25,000. Assume that the price elasticity measures an arc elasticity rather than a point elasticity.
- (a) If a \$2 sales tax on food were to cause the price of food to double, what would happen to Novia's consumption of food?
- (b) Suppose that she is given a tax rebate of \$5,000 to ease the effect of the tax. What would her consumption of food be now?
- (c) Is she better or worse off when given a rebate equal to the sales tax payments? Discuss.

- (2) Suppose Eric has the following utility function:

$$U(X, Y) = \sqrt{X} + \sqrt{Y}$$

where X is his consumption of candy bars, with price $P_X = \$1$, and Y is his consumption of espressos, with $P_Y = \$3$.

- (a) Derive Eric's demand functions for candy bars and espresso. (Hint: they are functions of his income I .)
- (b) What is his marginal utility of income.

2. Support there are two firms, 1 and 2, with demand function:

$$P = 2 - \frac{1}{2}q_1 - \frac{1}{2}q_2.$$

Assume no costs for either firm and firms compete in "quantity setting."

- (1) Find the Nash equilibrium for the following cases:
- (a) Firm 1 and firm 2 choose their quantity independently and simultaneously; (10分)
- (b) Firm 1 chooses her quantity first, and then firm 2 chooses her quantity after seeing the quantity firm 1 produced. (10分)
- (2) Compare the profits of firm 1 under (1a) and (1b), and give some economic comments. (5分)

3. The park service wants to restrict the number of visitors to a National Park to Q^* , which is fewer than the current number of visitors. It considers two policies: (i) raise the price of admissions, or (ii) set a quota. Compare the effects of these two policies on consumer surplus and welfare. (20分)

4. Is the following statement true, false, or uncertain? Explain. (10分)

Suppose there is a deadweight loss in the economy. If we know how to fix one problem causing the loss, we should do so in order to increase efficiency.

5. You decide to buy a printer for your graduate program assignments. You need to print in black and white (only). In 2003, you can buy a personal laser printer for \$8000 or an ink-jet printer for \$3200 that print 10 pages a minute at the same density (1200 dots per inch). The cost of ink and paper is about \$1.6 per page for a laser compared to about \$2.8 per page for an ink jet. On a single diagram, draw the short run (SR) average cost curves of the laser and ink-jet printers and the long run (LR) average cost curve. Suppose a printer lasts two years. Explain how your choice of printer should depend on the number of pages you intend to print. (20分)