

考試科目	財務管理	4171 所別	財管所	考試時間	3月18日 星期日	第一節
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1. World Enterprises is determined to report earnings per share of \$2.67. It therefore acquires the Axle Company:

	World Enterprises	Axle Company	Merged Firm
Earnings per share	\$2.00	\$2.50	\$2.67
Price per share	\$40.00	\$25.00	
Price-earnings ratio	20	10	
Number of shares	100,000	200,000	
Total earnings	\$200,000	\$500,000	
Total market value	\$4,000,000	\$5,000,000	

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There are no gains from the merger. In exchange for Axle shares, World Enterprises issues just enough of its own shares to ensure its \$2.67 earnings per share objective.

- Complete the above table for the merged firm. (5%)
  - How many shares of World Enterprises are exchanged for each share of Axle? (5%)
  - What is the cost of the merger to World Enterprises? (5%)
  - What is the change in the total market value of those World Enterprises Shares that were outstanding before the merger? (5%)
2. The Chief Financial Officer at HB Electronics notes that its cost of debt is below that of equity. He reasoned that the firm should ensure that it is able to increase its borrowings, because otherwise, the firm will be forced to use more expensive equity to finance its new projects. Then, the firm may have to reject some projects that it would have accepted when evaluated at the lower cost of debt. Comment on this reasoning. (20%)
3. Discuss how agency problem can develop between shareholders and bondholders when the firm is experiencing financial distress. (20%)
4. Equity, Inc. is currently an all-equity financed firm. It has 10,000 shares outstanding that sell for \$20 each. The firm has an operating income of \$30,000 and pays no taxes. The firm contemplates a restructuring that would issue \$50,000 in 8% debt which will be issued to repurchase stock. Show the value of the firm, EPS, and rate of return on the stock before and after the proposed restructuring. What changed? (20%)

備 考 試 題 隨 卷 繳 交

命 題 委 員 : 168 (簽章) 96年2月10日

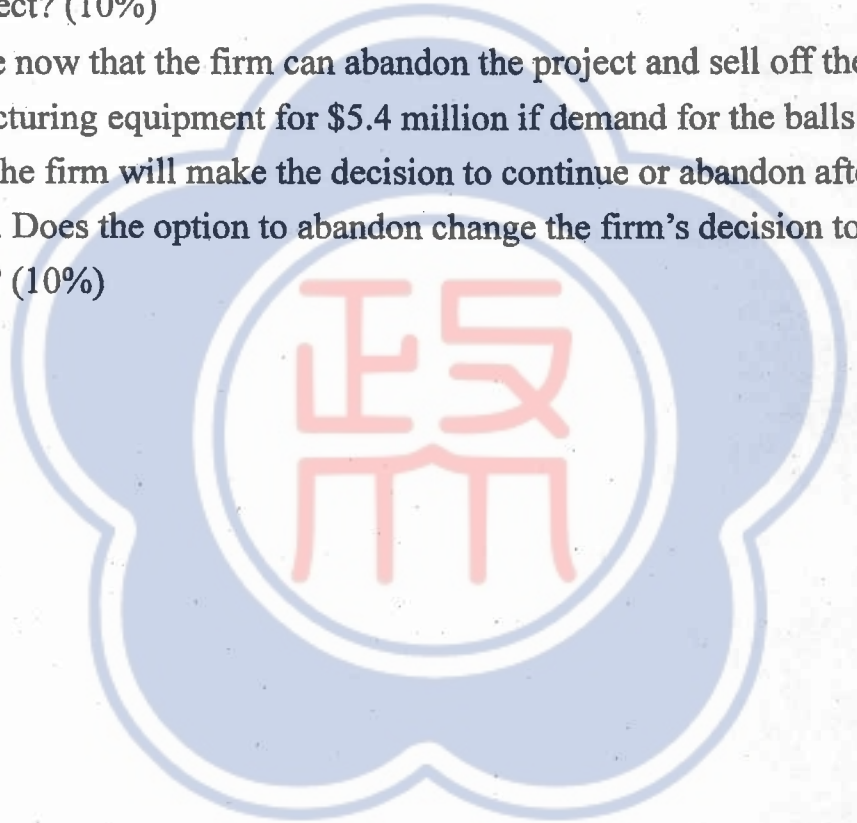
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5. Hit or Miss Sports is introducing a new product this year. If its see-at-night soccer balls are a hit, the firm expects to be able to sell 50,000 units a year at a price of \$60 each. If the new product is a bust, only 30,000 units can be sold at a price of \$55. The variable cost of each ball is \$30, and fixed costs are zero. The cost of the manufacturing equipment is \$6 million, and the project life is estimated at 10 years. The firm will use straight-line depreciation over 10-year life of the project. The firm's tax rate is 35 percent and the discount rate is 12 percent.

- a. If each outcome is equally likely, what is expected NPV? Will the firm accept the project? (10%)
- b. Suppose now that the firm can abandon the project and sell off the manufacturing equipment for \$5.4 million if demand for the balls turns out to be weak. The firm will make the decision to continue or abandon after the first year of sales. Does the option to abandon change the firm's decision to accept the project? (10%)



備 考	試 題 隨 卷 繳 交
命 題 委 員 :	169 (簽章) 96 年 2 月 10 日

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國立政治大學 九十六學年度 碩士班暨碩士在職專班招生考試 命題紙

第 1 頁，共 6 頁

考試科目	會計學	4171 所別財管所	考試時間	3 月 18 日 星期日	第 一 節
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注意事項：考生得使用中文以及簡章規定之計算機作答以下各項問題

- Many companies worldwide in recent years have bought back their common stock. For example, IBM, with large cash holdings, spent almost \$27 billion over five years repurchasing its stock. It is noted that many companies borrowed money to purchase treasury shares. Please answer the following questions: (25%)
  - What are the reasons companies buy back their own shares? (9%)
  - What will be the effect of common stock buybacks on measuring financial position or performance of a company? (10%)
  - In some cases, the motivation for the borrowing and repurchase of shares was the desire of executives to secure their year-end cash bonuses. Were the actions of executives in the best interests of stockholders? Why or why not? (6%)
- Apex Consultants began operations on December 1, 2006. The financial statements for Apex Consultants are shown below for the month ended December 31, 2006 (the first month of operations).

Fees earned		\$ 20,000
Operating expenses:		
Wages expense	\$ 6,250	
Rent expense	(a)	
Supplies expense	1,600	
Utilities expenses	900	
Miscellaneous expenses	1,550	
Total operating expenses		(b)
Net income		(c)

Jane Apex, capital, December 1, 2006		\$ 0
Investment on December 1, 2006:	\$ 30,000	
Net income for December	(d)	
	\$ (e)	
Less withdrawals	4,000	
Increase in owner's equity		(f)
Jane Apex, capital, December 31, 2006		\$ 32,100

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------	-----	-----------	------	------	--------------	-----

Apex Consultants  
Balance Sheet  
December 31, 2006

<u>Assets</u>		<u>Liabilities</u>	
Cash	\$ (g)	Accounts payable	\$ (i)
Supplies	1,100	<u>Owner's Equity</u>	
Land	<u>(h)</u>	Jane Apex, capital	<u>(f)</u>
Total assets	\$ 45,900	Total liabilities and owner's equity	\$ (k)

Apex Consultants  
Statement of Cash Flows  
For the Month Ended December 31, 2006

<b>Cash flows from operating activities:</b>			
Cash received from customers		\$ 20,000	
Deduct cash payments for expenses and payments to creditors		<u>1,200</u>	
Net cash flow from operating activities			\$ 18,800
<b>Cash flows from investing activities:</b>			
Cash payments for acquisition of land			(20,000)
<b>Cash flows from financing activities:</b>			
Cash received as owner's investment		\$ (l)	
Deduct cash withdrawal by owner		<u>(m)</u>	
Net cash flow from financing activities			<u>(n)</u>
Net cash flow and Dec. 31, 2006 cash balance			\$ (o)

**Required: (20%)**

- (1) Determine the missing amounts for letters (a) through (o). (15%)
  - (2) Determine the current ratio of Apex Consultants. What does a current ratio imply? (5%)
3. Thompson Toy usually sells merchandises to customs on account. At December 31, 2005, Thompson reported the following information on its balance sheet:

Accounts receivable	\$ 2,000,000
Less: Allowance for bad debts	120,000

During 2006, the company had the following transactions related to receivables.

(a) Sales on account	\$ 5,400,000
(b) Sales returns and allowances	80,000
(c) Collections of accounts receivable	4,600,000
(d) Write-offs of accounts receivable deemed uncollectible	130,000

備 考 試 題 隨 卷 繳 交

命 題 委 員 : 176 (簽章) 2007 年 3 月 7 日

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------	-----	------------	-----	------	--------------	-----

(e) Recovery of bad debts previously written off as uncollectible 50,000

Management of Thompson considers choosing from two methods that have been widely adopted in estimating uncollectible accounts expense: (i) using an estimated percentage of net credit sales; and (ii) based on an aging of accounts receivable.

**Required:** (20%)

- (1) Prepare the journal entry to record bad debts expense for 2006, assuming that management of Thompson estimates the percentage of uncollectible accounts expense to be 2% of net credit sales. (5%)
  - (2) Prepare the journal entry to record bad debts expense for 2006, assuming that, an aging of accounts receivable, management of Thompson estimates the end-of-year uncollectible accounts receivable to be \$140,000. (6%)
  - (3) Based on the information given in question (3), compute (a) the accounts receivable turnover ratio for the year 2006; and (b) the average days' sales uncollected to the second decimal. (5%)
  - (4) Should Thompson adopt a direct write off approach rather than using an allowance method in dealing with its doubtful accounts? The reasons? (4%)
4. Jill Todd, M.D., maintains the accounting records of Todd Dental on a cash basis. During 2006, Dr. Todd collected \$142,600 from her patients and paid \$55,470 in expenses. At January 1, 2006, and December 31, 2006, she had fees receivable, unearned fees, accrued expenses, and prepaid expenses as follows (all long-lived assets are rented):

Accounts	January 1, 2006	December 31, 2006
Fees receivables	\$ 9,250	\$ 15,927
Unearned fees	2,840	4,111
Accrued expenses	3,435	2,108
Prepaid expenses	1,917	3,232

**Required:** (10%)

- (1) What amount of revenue should Todd Clinic report in its income statement for the year 2006 based on an accrual basis? (5%)
- (2) What amount of expense should Todd Clinic report in its income statement for the year 2006 based on an accrual basis? (5%)

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命題委員：	177 (簽章) 年 月 日

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考試科目	會計學	417/所	別財管所	考試時間	3月18日	第一節
					星期日	

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5. Bill Maher Inc. faces the following situations in making decisions. Consider each case individually. (10%)
- A. Bill Maher Inc. has completed the purchase of a new server. The fair market value of the equipment is \$824,160. The purchase agreement specifies an immediate down payment of \$200,000 and semiannual (every six months) payments of \$76,952 beginning at the end of 6 months for 5 years. What is the interest rate per annum, considered in this purchase transaction? (6%)
- B. Bill Maher Inc. has \$572,000 to invest. The company is considering two alternative uses of the funds. One alternative provides \$80,000 at the end of each year for 12 years, and the other is to receive a single lump sum payment of \$1,900,000 at the end of the 12 years. Please provide your computations to show which alternative should Bill Maher select? Assume the interest rate is 9% constant over the entire investment period. (4%)
6. The following data present three different lease transactions in which Gee Enterprise engaged in 2006. Assume that all lease transactions start on January 1, 2006. In no case does Gee receive title to the properties leased during or at the end of the lease term.

Nature of lease	Lessor		
	Whiney Co.	Ray Co.	Tim Co.
Type of property	Automobile	Truck	Furniture
Bargain purchase option	None	None	None
Lease term	4 years	6 years	3 years
Estimated economic life	8 years	7 years	5 years
Year rental	\$ 260,000	\$ 240,000	\$ 80,000
Fair market value of leased asset	\$ 1,600,000	\$ 1,160,000	\$ 550,000
Present value of the lease rental payments	\$ 960,000	\$ 1,000,000	\$ 240,000

**Required: (15%)**

- (1) How should the lease transaction with Ray Co. be recorded on January 1, 2006. (5%)
- (2) How should the lease transaction with Whiney Co. be recorded on January 1, 2006. (5%)
- (3) What is the reporting impact of leases classified as operating or capital lease? (5%)

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命題委員：	178 (簽章) 2007年3月7日

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考試科目 會計學 所別 會計 考試時間 3月18日 星期 日 第一節

Table 1 Present Value of \$1

$$P_{n,i} = \frac{1}{(1+i)^n}$$

$n \backslash i$	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	0.990	0.980	0.970	0.961	0.952	0.943	0.934	0.925	0.917	0.909	0.892	0.877	0.869
2	0.980	0.961	0.942	0.924	0.907	0.889	0.873	0.857	0.841	0.826	0.797	0.769	0.756
3	0.970	0.942	0.915	0.888	0.863	0.839	0.816	0.793	0.772	0.751	0.711	0.675	0.657
4	0.960	0.923	0.888	0.854	0.822	0.792	0.762	0.735	0.708	0.683	0.635	0.592	0.571
5	0.951	0.905	0.862	0.821	0.783	0.747	0.712	0.680	0.649	0.620	0.567	0.519	0.497
6	0.942	0.887	0.837	0.790	0.746	0.704	0.666	0.630	0.596	0.564	0.506	0.455	0.432
7	0.932	0.870	0.813	0.759	0.710	0.665	0.622	0.583	0.547	0.513	0.452	0.399	0.375
8	0.923	0.853	0.789	0.730	0.676	0.627	0.582	0.540	0.501	0.466	0.403	0.350	0.326
9	0.914	0.836	0.766	0.702	0.644	0.591	0.543	0.500	0.460	0.424	0.360	0.307	0.284
10	0.905	0.820	0.744	0.675	0.613	0.558	0.508	0.463	0.422	0.385	0.321	0.269	0.247
11	0.896	0.804	0.722	0.649	0.584	0.526	0.475	0.428	0.387	0.350	0.287	0.236	0.214
12	0.887	0.788	0.701	0.624	0.556	0.496	0.444	0.397	0.355	0.318	0.256	0.207	0.186
13	0.878	0.773	0.680	0.600	0.530	0.468	0.414	0.367	0.326	0.289	0.229	0.182	0.162
14	0.869	0.757	0.661	0.577	0.505	0.442	0.387	0.340	0.299	0.263	0.204	0.159	0.141
15	0.861	0.743	0.641	0.555	0.481	0.417	0.362	0.315	0.274	0.239	0.182	0.140	0.122
16	0.852	0.728	0.623	0.533	0.458	0.393	0.338	0.291	0.251	0.217	0.163	0.122	0.106
17	0.844	0.714	0.605	0.513	0.436	0.371	0.316	0.270	0.231	0.197	0.145	0.107	0.092
18	0.836	0.700	0.587	0.493	0.415	0.350	0.295	0.250	0.211	0.179	0.130	0.094	0.080
19	0.827	0.686	0.570	0.474	0.395	0.330	0.276	0.231	0.194	0.163	0.116	0.082	0.070
20	0.819	0.672	0.553	0.456	0.376	0.311	0.258	0.214	0.178	0.148	0.103	0.072	0.061
21	0.811	0.659	0.537	0.438	0.358	0.294	0.241	0.198	0.163	0.135	0.092	0.063	0.053
22	0.803	0.646	0.521	0.421	0.341	0.277	0.225	0.183	0.150	0.122	0.082	0.055	0.046
23	0.795	0.634	0.506	0.405	0.325	0.261	0.210	0.170	0.137	0.111	0.073	0.049	0.040
24	0.787	0.621	0.491	0.390	0.310	0.246	0.197	0.157	0.126	0.101	0.065	0.043	0.034
25	0.779	0.609	0.477	0.375	0.295	0.232	0.184	0.146	0.115	0.092	0.058	0.037	0.030
26	0.772	0.597	0.463	0.360	0.281	0.219	0.172	0.135	0.106	0.083	0.052	0.033	0.026
27	0.764	0.585	0.450	0.346	0.267	0.207	0.160	0.125	0.097	0.076	0.046	0.029	0.022
28	0.756	0.574	0.437	0.333	0.255	0.195	0.150	0.115	0.089	0.069	0.041	0.025	0.019
29	0.749	0.563	0.424	0.320	0.242	0.184	0.140	0.107	0.082	0.063	0.037	0.022	0.017
30	0.741	0.552	0.411	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.033	0.019	0.015
31	0.734	0.541	0.399	0.296	0.220	0.164	0.122	0.092	0.069	0.052	0.029	0.017	0.013
32	0.727	0.530	0.388	0.285	0.209	0.154	0.114	0.085	0.063	0.047	0.026	0.015	0.011
33	0.720	0.520	0.377	0.274	0.199	0.146	0.107	0.078	0.058	0.043	0.023	0.013	0.009
34	0.712	0.510	0.366	0.263	0.190	0.137	0.100	0.073	0.053	0.039	0.021	0.011	0.008
35	0.705	0.500	0.355	0.253	0.181	0.130	0.093	0.067	0.048	0.035	0.018	0.010	0.007
36	0.698	0.490	0.345	0.243	0.172	0.122	0.087	0.062	0.044	0.032	0.016	0.008	0.006
37	0.692	0.480	0.334	0.234	0.164	0.115	0.081	0.057	0.041	0.029	0.015	0.007	0.005
38	0.685	0.471	0.325	0.225	0.156	0.109	0.076	0.053	0.037	0.026	0.013	0.006	0.004
39	0.678	0.461	0.315	0.216	0.149	0.103	0.071	0.049	0.034	0.024	0.012	0.006	0.004
40	0.671	0.452	0.306	0.208	0.142	0.097	0.066	0.046	0.031	0.022	0.010	0.005	0.003
41	0.665	0.444	0.297	0.200	0.135	0.091	0.062	0.042	0.029	0.020	0.009	0.004	0.003
42	0.658	0.435	0.288	0.192	0.128	0.086	0.058	0.039	0.026	0.018	0.008	0.004	0.002
43	0.651	0.426	0.280	0.185	0.122	0.081	0.054	0.036	0.024	0.016	0.007	0.003	0.002
44	0.645	0.418	0.272	0.178	0.116	0.077	0.050	0.033	0.022	0.015	0.006	0.003	0.002
45	0.639	0.410	0.264	0.171	0.111	0.072	0.047	0.031	0.020	0.013	0.006	0.002	0.001
46	0.632	0.402	0.256	0.164	0.105	0.066	0.044	0.029	0.018	0.012	0.005	0.002	0.001
47	0.626	0.394	0.249	0.158	0.100	0.064	0.041	0.026	0.017	0.011	0.004	0.002	0.001
48	0.620	0.386	0.241	0.152	0.096	0.060	0.038	0.024	0.015	0.010	0.004	0.001	0.001
49	0.614	0.378	0.234	0.146	0.091	0.057	0.036	0.023	0.014	0.009	0.003	0.001	0.001
50	0.608	0.371	0.228	0.140	0.087	0.054	0.033	0.021	0.013	0.008	0.003	0.001	0.000

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Table 2 Present Value of an Ordinary Annuity of \$1

$$P_{ni} = \frac{1 - \frac{1}{(1+i)^n}}{i}$$

$n \backslash i$	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	0.990	0.980	0.970	0.961	0.952	0.943	0.934	0.925	0.917	0.909	0.892	0.877	0.869
2	1.970	1.941	1.913	1.886	1.850	1.833	1.808	1.783	1.759	1.735	1.690	1.646	1.625
3	2.940	2.883	2.828	2.775	2.723	2.673	2.624	2.577	2.531	2.486	2.401	2.321	2.283
4	3.901	3.807	3.717	3.629	3.545	3.465	3.387	3.312	3.239	3.169	3.037	2.913	2.834
5	4.853	4.713	4.579	4.451	4.329	4.212	4.100	3.992	3.889	3.790	3.604	3.433	3.352
6	5.795	5.601	5.417	5.242	5.075	4.917	4.766	4.622	4.485	4.355	4.111	3.888	3.784
7	6.728	6.471	6.230	6.002	5.786	5.582	5.389	5.206	5.032	4.868	4.563	4.288	4.160
8	7.651	7.325	7.019	6.732	6.463	6.209	5.971	5.746	5.534	5.334	4.967	4.638	4.487
9	8.566	8.162	7.786	7.435	7.107	6.801	6.515	6.246	5.995	5.759	5.328	4.946	4.771
10	9.471	8.982	8.530	8.110	7.721	7.360	7.023	6.710	6.417	6.144	5.650	5.216	5.018
11	10.367	9.786	9.252	8.760	8.306	7.886	7.498	7.138	6.805	6.495	5.937	5.452	5.233
12	11.255	10.575	9.954	9.385	8.863	8.383	7.942	7.536	7.160	6.819	6.194	5.660	5.420
13	12.133	11.348	10.634	9.985	9.393	8.852	8.357	7.903	7.486	7.103	6.423	5.842	5.583
14	13.003	12.106	11.296	10.563	9.898	9.294	8.745	8.244	7.786	7.368	6.628	6.002	5.724
15	13.865	12.849	11.937	11.118	10.379	9.712	9.107	8.559	8.060	7.606	6.810	6.142	5.847
16	14.717	13.577	12.561	11.652	10.837	10.105	9.446	8.851	8.312	7.823	6.973	6.265	5.954
17	15.562	14.291	13.166	12.165	11.274	10.477	9.763	9.121	8.543	8.021	7.119	6.372	6.047
18	16.398	14.992	13.753	12.659	11.689	10.827	10.059	9.371	8.755	8.201	7.249	6.467	6.127
19	17.226	15.678	14.323	13.133	12.058	11.158	10.335	9.603	8.950	8.364	7.365	6.530	6.198
20	18.045	16.351	14.877	13.590	12.462	11.469	10.594	9.818	9.128	8.513	7.469	6.623	6.259
21	18.856	17.011	15.415	14.029	12.821	11.764	10.835	10.016	9.292	8.648	7.562	6.686	6.312
22	19.660	17.658	15.936	14.451	13.163	12.041	11.061	10.200	9.442	8.771	7.644	6.742	6.358
23	20.455	18.292	16.443	14.858	13.488	12.303	11.272	10.371	9.580	8.883	7.718	6.749	6.398
24	21.243	18.913	16.935	15.246	13.798	12.550	11.469	10.528	9.706	8.984	7.784	6.835	6.433
25	22.023	19.523	17.413	15.622	14.093	12.783	11.653	10.674	9.822	9.077	7.843	6.872	6.464
26	22.795	20.121	17.876	15.982	14.375	13.003	11.825	10.809	9.928	9.160	7.895	6.908	6.490
27	23.559	20.706	18.327	16.329	14.643	13.210	11.986	10.935	10.026	9.237	7.942	6.935	6.513
28	24.316	21.281	18.764	16.663	14.898	13.406	12.137	11.051	10.116	9.306	7.984	6.960	6.533
29	25.065	21.844	19.188	16.983	15.141	13.590	12.277	11.158	10.198	9.369	8.021	6.983	6.550
30	25.807	22.398	19.600	17.292	15.372	13.764	12.409	11.257	10.273	9.426	8.055	7.002	6.563
31	26.542	22.937	20.000	17.589	15.592	13.929	12.531	11.349	10.342	9.479	8.084	7.019	6.579
32	27.269	23.468	20.388	17.873	15.802	14.084	12.646	11.434	10.406	9.526	8.111	7.034	6.590
33	27.989	23.988	20.765	18.147	16.002	14.230	12.753	11.513	10.464	9.569	8.135	7.048	6.600
34	28.702	24.498	21.131	18.411	16.192	14.368	12.854	11.586	10.517	9.608	8.156	7.059	6.609
35	29.408	24.998	21.487	18.664	16.374	14.498	12.947	11.654	10.566	9.644	8.175	7.070	6.616
36	30.107	25.488	21.832	18.908	16.546	14.620	13.035	11.717	10.611	9.676	8.192	7.078	6.623
37	30.799	25.969	22.167	19.142	16.711	14.736	13.117	11.775	10.652	9.705	8.207	7.086	6.628
38	31.484	26.440	22.492	19.367	16.867	14.846	13.193	11.828	10.690	9.732	8.220	7.093	6.633
39	32.163	26.902	22.808	19.584	17.071	14.949	13.264	11.878	10.725	9.756	8.233	7.099	6.638
40	32.834	27.355	23.114	19.792	17.159	15.046	13.331	11.924	10.757	9.779	8.243	7.105	6.641
41	33.499	27.799	23.412	19.993	17.294	15.138	13.394	11.967	10.786	9.799	8.253	7.109	6.645
42	34.158	28.234	23.701	20.185	17.423	15.224	13.452	12.006	10.813	9.817	8.261	7.113	6.647
43	34.810	28.661	23.981	20.370	17.545	15.306	13.506	12.043	10.837	9.833	8.269	7.117	6.650
44	35.455	29.079	24.254	20.548	17.662	15.383	13.557	12.077	10.860	9.849	8.276	7.120	6.652
45	36.094	29.490	24.518	20.720	17.774	15.455	13.605	12.108	10.881	9.862	8.282	7.123	6.654
46	36.727	29.892	24.775	20.884	17.880	15.524	13.650	12.137	10.900	9.875	8.287	7.125	6.655
47	37.353	30.286	25.024	21.042	17.981	15.589	13.691	12.164	10.917	9.886	8.292	7.127	6.657
48	37.973	30.673	25.266	21.195	18.077	15.650	13.730	12.189	10.933	9.896	8.297	7.129	6.658
49	38.588	31.052	25.501	21.341	18.168	15.707	13.766	12.212	10.948	9.906	8.301	7.131	6.659
50	39.196	31.423	25.729	21.482	18.255	15.761	13.800	12.233	10.961	9.914	8.304	7.132	6.660

國立政治大學圖書館

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考試科目	經濟學	417/所別	財管系	考試時間	3月18日 星期日	第一節
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國立政治大學圖書館

1. Country A pegs its currency to the dollar.
  - a) (8 points) Suppose that an unexpected appreciation occurs and the investors believe that the government of country A will not allow further appreciation in the near future. What will be the effects of the appreciation on output and on the interest rate?
  - b) (8 points) Suppose that the appreciation is called for by the pressure from other foreign governments in order to cut down the trade surplus that the country A has. Investors believe that another appreciation is on the way and this process will continue for an extended period of time. What will be the effects of the initial appreciation on output and on the interest rate?

2. Suppose that the Philips curve is given by

$$\pi_t = \pi_t^e + 0.03 - 0.5u_t$$

where  $\pi_t^e = \pi_{t-1}$ .

- a) (2 points) What is the natural rate of unemployment?
  - b) (5 points) Suppose that the inflation rate is now 12% and the unemployment rate is equal to the natural rate. The government decides to lower the inflation rate to 3% by keeping the unemployment rate 2% higher than its natural rate. How many years will it take to achieve the target?
  - c) (6 points) Now suppose that half the workers have indexed labor contracts. Please tell me how high the unemployment rate is necessary if the government wants to achieve the same target in the same amount of time you got in question b).
3. China's foreign-exchange reserves passed the \$1 trillion mark last year. As a rule of thumb, a country only needs enough foreign exchange to cover three months' imports (China's reserves can cover 15 months), or to settle its short-term foreign debt (China has 5 times too many).
    - a) (7 points) Please state the possible cause(s) of China's fast-growing foreign-exchange reserves and how it can be stopped, at least theoretically.
    - b) (7 points) Most of China's foreign exchange reserves are invested in U.S. dollars, mainly Treasury securities (U.S. government bonds). Economists argue that China is in fact subsidizing rich American consumers. Please elaborate this argument.
    - c) (7 points) China have domestic projects, including pension funds, education, health care, are starving of funds. Why can't they use the huge foreign reserves on those projects?

備 考 試 題 隨 卷 繳 交

命 題 委 員 : 181 (簽章) 2007 年 3 月 5 日

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考試科目	經濟學	417/ 所 別	財管系	考試時間	3 月 18 日 星期日 第一節
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國立政治大學圖書館

4. Simon lives in Taipei. Each week he divides his transportation budget NT\$600 between bus rides and taxi rides. The cost of a taxi ride is NT\$120 and the cost of a bus ride is NT\$15. These two transportation methods are neither perfect substitutes nor perfect complements to Simon.
- (3 points) Due to the rising oil price recently, the city government decides to raise the fare of riding on the bus to NT\$20. Please put bus rides on the  $x$ -axis and taxi rides on the  $y$ -axis to illustrate Simon's budget set before and after the bus fare raise in the same diagram.
  - (7 points) In your diagram from part a), please illustrate the effect of the rise in the bus fare on Simon's choice of the number of bus rides and taxi rides that he will buy. Be sure to indicate clearly in your diagram the substitution and income effects associated with the fare increase.
  - (4 points) In your diagram from part a), please indicate the government's additional revenues (**denominated in taxi rides**) generated by the fare increase. Note that the additional revenues equal Simon's additional expenditures.

An alternative proposal is to sell Simon a SuperCard pass. This SuperCard pass will charge Simon an initial fee then allow Simon to continue to ride the bus at the original NT\$15 fare instead of the new NT\$20 fare.

- (7 points) Suppose that the SuperCard pass is priced at the level where the city government can earn the same additional revenues (**also in terms of the taxi rides**) as those that resulted from the fare increase. In a new diagram illustrate the budget line that would result from Simon purchasing the SuperCard Pass at this price. Will Simon buy the pass? Briefly explain your answer using your diagram.
  - (7 points) Suppose that the city government prices the new SuperCard pass so that Simon would be indifferent between purchasing the card and simply paying the higher NT\$20 fare. Illustrate in a new diagram the additional revenues that the city government could raise if it charges Simon this price for the card.
5. Suppose that the total cost curve for a typical firm in the olive oil industry is  $TC(Q) = 0.05Q^2 + 45$ . Quantity ( $Q$ ) is measured in millions of liters per year.
- (5 points) What is the supply curve of a typical firm in the olive oil industry? If there are 10 firms in the industry each of which has the typical cost curve then what is the industry supply curve of olive oil?

備 考	試 題 隨 卷 繳 交
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命 題 委 員 :	182 (簽章)	年	月	日
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考試科目	經濟學	系別	財管系	考試時間	3月18日 星期日	第一節
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Demand per year for olive oil is  $Q^D = 600 - 100P$ . Quantity ( $Q$ ) is again measured in millions of liters per year and price ( $P$ ) is measured in dollars per liter.

- b) (6 points) If the market is perfectly competitive then what will be the market clearing price and quantity traded in the olive oil market?
- c) (3 points) How many millions of liters will each firm supply?
- d) (8 points) If the olive oil producers formed a cartel and decided to choose a price and quantity that would maximize industry profits then what price and quantity will the cartel choose?

國立政治大學圖書館



備考	試題隨卷繳交
命題委員：	183 (簽章) 年 月 日

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考試科目	統計學	所別	統計系	考試時間	3月18日 星期日	第3節
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國立政治大學圖書館

1. A Professor of Finance has noted from past experience that students who do all their assignments have a 90% chance of passing the final exam, and if they don't do any of the assignments they have a 15% chance of passing the final exam. The Professor estimates that 65% of students have done their assignments. Based on these information,
  - a. What percentage of students passed the final exam? (5%)
  - b. Given that a student passed the final exam, what is the probability they completed their assignments? (5%)
  
2. An advertisement claims that two out of five doctors recommend a certain toothpaste. A random sample of 20 doctors is selected, and it is found that only two of them recommend the product.
  - a. Assuming the advertising claim is true, what is the probability of the observed event? (5%)
  - b. Given the sampling results, do you believe the advertisement? Explain. (5%)
  
3. There are 3 boxes. The first box contains 2 white balls and 2 black balls; the second box contains 2 white balls and 1 black ball; while the third box contains 1 white ball and 3 black balls.
  - a. From each box, a ball is randomly drawn. Compute the probability that all 3 balls drawn are white. (5%)
  - b. One box is randomly selected, then a ball is randomly drawn from this box. Compute the probability that the ball drawn is white. (5%)

備考	試題隨卷繳交
命題委員：	170 (簽章) 96年3月2日

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考試科目	統計學	471 所別	財管系	考試時間	3月18日 星期日	第3節
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國立政治大學圖書館

4. Data on the rates of return for two different stocks were collected over a fifty year period. The rate of return is defined as, the increase in value of the portfolio (including any dividends or other distributions) during the year, divided by its value at the beginning of the year. The rate of return is recorded as a percentage and can be either positive or negative. The following are some descriptive statistics, prepared in MS Excel, on these rates of return.

Stock A % return		Stock B % return	
Mean	15.142	Mean	18.860
Standard Error	2.248	Standard Error	2.290
Median	19.05	Median	16.95
Mode	13	Mode	29.4
Standard Deviation	15.894	Standard Deviation	16.193
Sample Variance	252.613	Sample Variance	262.224
Kurtosis	4.899	Kurtosis	1.825
Skewness	-1.818	Skewness	1.071
Range	86.6	Range	77.3
Minimum	-46.5	Minimum	-7.4
Maximum	40.1	Maximum	69.9
Sum	757.1	Sum	943
Count	50	Count	50

Based on this information, and assume that the history of stocks A and B is a useful guide to what may be expected of them in the future.

- If you were to invest in the stock with the highest average return, which stock would you choose and why? (5%)
- If you were to invest in the stock with the least risk, which stock would you choose and why? (5%)

備 考 試 題 隨 卷 繳 交

命 題 委 員 : 171 (簽章) 96 年 3 月 2 日

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考試科目	統計學	所別	社會學系	考試時間	3月18日 星期日	第3節
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國立政治大學圖書館

- 5.
- a. Define random variables. (5%)
  - b. Should "tossing a fair dice" be considered a random variable? Why or why not? (5%)
6. In a class exercise, each student is asked to draw a sample of 10 numbers from an urn which contains many numbers well mixed up. Each student is asked to compute the mean and variance of his/her sample and also a 95% confidence interval for the mean of all the numbers in the urn, assuming they form a normal distribution. There are 200 students in the class. Let  $\mu$  and  $\sigma^2$  denote the mean and variance of all the numbers in the urn.
- a. Consider the 200 confidence intervals constructed by the students. If  $X$  denotes the number of confidence intervals that contain the true value of  $\mu$ , what is the mean and variance of  $X$ . (10%)
  - b. The lecturer knows that  $\mu = 5$  and  $\sigma^2 = 4$ .
    - i. What would she expect the average and the variance of the 200 means to be? The average of the 200 variances? (10%)
    - ii. If she constructs an interval that has probability 0.95 containing each student's sample variance, what would this interval be? (5%)
  - c. The students were told that their 200 sample means have mean 4.8 and variance 0.56. Use this information to construct a 95% confidence interval for  $\mu$ . (5%)

備考	試題隨卷繳交
命題委員：	172 (簽章) 96年3月2日

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考試科目	統計學	4171 所別	財管系	考試時間	3月18日 星期日	第3節
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國立政治大學圖書館

7. An article studying the effect of temperature on the pH of skim milk reported the following data

x	4	4	24	24	25	38	38	40
y	6.85	6.75	6.63	6.65	6.72	6.62	6.57	6.52
x	45	50	55	56	60	67	70	78
y	6.50	6.48	6.42	6.41	6.38	6.34	6.32	6.34

where  $x$  = temperature ( $^{\circ}\text{C}$ ) and  $y$  = milk pH.

a. Given that

$$\sum x = 678; \sum y = 104.5; \sum x^2 = 36056; \sum y^2 = 682.905; \sum xy = 4376.20,$$

compute the correlation coefficient  $r$ . (5%)

b. The following computer output is obtained on the data.

Predictor	Coef.	S.E. of Coef.	t-stat.	p-value
Constant	6.83197	0.02140	319.24	0.000
x	-0.0070965	0.0004508	-15.74	0.000
		S=0.0385852	R-Sq=0.9465	R-Sq (adjusted)= 0.9427

Do the data suggest that there is a negative linear relationship between temperature and milk pH? Carry out a test of hypothesis at the 0.01 level. (5%)

c. Use the fitted model to give an estimate of the mean milk pH when the temperature is  $50^{\circ}\text{C}$  and a standard error of the estimate. (10%)

備 考 試 題 隨 卷 繳 交

命 題 委 員 :

173 (簽章) 96年3月2日

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考試科目	微積分	所別	財管 4171	考試時間	3月18日 星期日	第 3 節
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1. (45 pts) Write down final answers only.

(a) Find  $\lim_{x \rightarrow 0} (5 + x^{-2})$ .

(b) Find  $\lim_{x \rightarrow -\infty} \pi 2^x$ .

(c) Find  $\int_0^1 (x^2 - 1) dx$ .

(d) Find  $d(x^{-1/2})/dx$ .

(e) Find  $d(\sin(x^2))/dx$ .

(f) Find  $\lim_{n \rightarrow \infty} (1 - 1/(2n))^{n+1}$ .

(g) Find  $\int_0^1 \int_0^x (x^2 + 1) dy dx$ .

(h) Suppose that  $f(x) = (x - 1)/(e^x + 1)$ . Find  $df(x)/dx$ .

(i) Find an anti-derivative for the function  $f(x) = x \sin(x)$ .

2. (15 pts) Suppose that  $y = f(x)$  is a differentiable function of  $x$  and  $x^2 + 2y^3 = 3x + 2y$ . Suppose that  $f(0) = 1$ . Find  $d^2y/dx^2$  at  $x = 0$ .

3. (15 pts) Let  $A = \{(x, y) : x \leq y \leq x + 1 \text{ and } 1 \leq y \leq 3\}$ . Find  $\iint_A (x^2 + y) dx dy$ .

4. (15 pts) Let  $f(x) = x^2 + x^{-1}$  for  $x > 0$ . Find the minimum of  $f$  on the interval  $(0, \infty)$ .

5. (10 pts) Let

$$f(x, y) = \begin{cases} \frac{x^2 + y^2}{x - y} & \text{if } x \neq y; \\ 0 & \text{otherwise.} \end{cases}$$

Determine whether  $f$  is continuous at the point  $(0, 0)$  and justify your answer.

備 考 試 題 隨 卷 繳 交

命 題 委 員 : 174 (簽章) 96 年 2 月 15 日

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