

考 試 科 目	財務管理	所 別	財務管理研究所	考 試 時 間	3 月 15 日 星 期 日	第 1 節
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I. 單選題 (總分:48%, 每題:3%)

1. Which of the following are agency costs?
 - I. forgoing an investment opportunity which would add to the market value of the owner's equity
 - II. paying a dividend to each of the existing shareholders
 - III. purchasing new equipment which increases the value of each share of stock
 - IV. hiring outside auditors to verify the accuracy of the company financial statements
 - a. II and III only
 - b. I and III only
 - c. I and IV only
 - d. II and IV only
 - e. I, II, and IV only
2. Which one of the following bonds has the greatest interest rate risk?
 - a. 3-year; 4 percent coupon
 - b. 3-year; 6 percent coupon
 - c. 5-year; 6 percent coupon
 - d. 7-year; 6 percent coupon
 - e. 7-year; 4 percent coupon
3. You own a house that you rent for \$1,600 a month. The maintenance expenses on the house average \$300 a month. The house cost \$110,000 when you purchased it six years ago. A recent appraisal on the house valued it at \$295,000. If you sell the house you will incur \$15,000 in real estate fees. The annual property taxes are \$25,000. You are deciding whether to sell the house or convert it for your own use as a professional office. What value should you place on this house when analyzing the option of using it as a professional office?
 - a. \$150,000
 - b. \$255,000
 - c. \$280,000
 - d. \$293,100
 - e. \$310,000
4. The Clothing Co. is looking at a project that will require \$40,000 in net working capital and \$100,000 in fixed assets. The project is expected to produce annual sales of \$90,000 with associated costs of \$60,000. The project has a 10-year life. The company uses straight-line depreciation to a zero book value over the life of the project. The tax rate is 35 percent. What is the operating cash flow for this project?
 - a. -\$17,000
 - b. \$19,500
 - c. \$23,000
 - d. \$33,000
 - e. \$90,000
5. The Handelcreek Co. is considering expanding their operations. Fixed costs are estimated at \$86,000 a year. The variable cost per unit is estimated at \$18.50. The estimated sales price is \$34.00 per unit. What is the cash break-even point of this project?
 - a. 2,529 units
 - b. 4,649 units
 - c. 5,548 units
 - d. 7,114 units
 - e. 9,740 units

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11. A compromise dividend policy advocates:
- rejecting positive net present value projects in order to maintain constant dividends.
 - maintaining a target dividend payout ratio as the top priority.
 - selling equity to maintain a high dividend policy.
 - trying to avoid cutting back on either positive net present value projects or dividends.
 - strict adherence to a constant short-run debt-equity ratio.
12. Juno Industrial Products is debating between a leveraged and an unleveraged capital structure. The all equity capital structure would consist of 20,000 shares of stock. The debt and equity option would consist of 14,000 shares of stock plus \$170,000 of debt with an interest rate of 8 percent. What is the break-even level of earnings before interest and taxes between these two options? Ignore taxes.
- \$42,208
 - \$44,141
 - \$45,333
 - \$46,667
 - \$48,928
13. If cash flow from operations is \$7,300, net capital spending is -\$3,500, and net working capital declines by \$1,600, what is cash flow from assets?
- \$ 2,200
 - \$ 5,400
 - \$ 9,200
 - \$10,800
 - \$12,400
14. A project which requires an initial investment of \$12 million. The target D/E is 1.25. Flotation costs for equity are 10% and flotation costs for debt are 3%. What is the true cost (in dollars) of the project when you consider flotation costs?
- \$11.286 million
 - \$11.310 million
 - \$12.732 million
 - \$12.781 million
 - \$13.086 million
15. Your portfolio has a beta of 1.24. The portfolio consists of 10 percent U.S. Treasury bills, 55 percent in stock A, and 35 percent in stock B. Stock A has a risk-level equivalent to that of the overall market. What is the beta of stock B?
- 0
 - 0.69
 - 1.00
 - 1.24
16. Consider a 7-year bond with a 9% coupon and a yield to maturity of 12%. If interest rates remain constant, one year from now the price of this bond will be _____.
- Higher
 - Lower
 - The same
 - Indeterminate

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II. 計算題 (總分:24%, 每題:6%)

1. You want to buy a house for \$100,000. The bank will loan you 80% of the purchase price. The mortgage terms are "10 years, semi-annually payment, 12% APR." How much you need to pay the bank if you decide to pay back the loan after 5 years? (6%)
2. Sam's Souvenir Shop has a cost of debt of 8 percent, a cost of equity of 12 percent, and a cost of preferred stock of 9 percent. The firm has 116,000 shares of common stock outstanding at a market price of \$24 a share. There are 51,000 shares of preferred stock outstanding at a market price of \$38 a share. The bond issue has a face value of \$900,000 and a market quote of 105. The company's tax rate is 35 percent. What is the weighted average cost of capital for Sam's Souvenir Shop? (6%)
3. Super Sounds is expecting a period of intense growth and has decided to retain more of their earnings to help finance that growth. As a result, they are going to reduce the annual dividend by 20 percent a year for the next three years. After that they will maintain a constant dividend of \$1 a share. Last year, the company paid \$2.25 as the annual dividend per share. What is the market value of this stock if the required rate of return is 16 percent? (6%)
4. Even Better Products as come out with a new and improved product. As a result, the firm projects an ROE of 20%, and it will maintain a plowback ratio of 0.30. Its earnings this year will be \$2 per share. Investors expect a 12% rate of return on the stock. What is the present value of growth opportunities? (6%)

III. 申論題 (總分:28%)

1. What is operating leverage? What are the implications of operating leverage for (a) the financial manager and (b) the investor? (8%)
2. (a) Describe the assumptions and conclusions of the static theory of capital structure, and (b) elaborate some managerial recommendations from the static theory of capital structure. (8%)
3. One of the most important lessons in corporate finance is "The cost of capital depends primarily on the use of the funds, not the source." Elaborate the meaning of the lesson. (6%)
4. Derivative securities can be used effectively for risk management. One of the examples is the so-called protective put strategy. (a) Describe the protective put strategy, and (b) list some situations under which you would use the strategy. (6%)

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TABLE A.2 Present value of \$1 to be received after t periods = $1/(1+i)^t$

APPENDIX A Mathematical Tables

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	20%	24%	28%	32%	36%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9258	0.9174	0.9091	0.8928	0.8772	0.8666	0.8575	0.8333	0.8066	0.7813	0.7576	0.7353
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.7972	0.7785	0.7651	0.7522	0.7182	0.6866	0.6576	0.6309	0.6063
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7118	0.6830	0.6556	0.6294	0.5866	0.5475	0.5118	0.4784	0.4471
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6355	0.5921	0.5518	0.5134	0.4611	0.4129	0.3678	0.3257	0.2863
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6498	0.6209	0.5674	0.5194	0.4772	0.4371	0.3761	0.3209	0.2704	0.2234	0.1796
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5066	0.4566	0.4123	0.3704	0.3049	0.2471	0.1958	0.1489	0.1062
7	0.9327	0.8706	0.8131	0.7598	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4523	0.3986	0.3506	0.3060	0.2369	0.1761	0.1234	0.0757	0.0320
8	0.9235	0.8535	0.7894	0.7307	0.6766	0.6274	0.5820	0.5403	0.5019	0.4661	0.4039	0.3486	0.2986	0.2525	0.1796	0.1159	0.0612	0.0111	0.0000
9	0.9143	0.8368	0.7684	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3606	0.3037	0.2524	0.2047	0.1296	0.0729	0.0172	0.0000	0.0000
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5594	0.5083	0.4632	0.4224	0.3855	0.3220	0.2667	0.2172	0.1711	0.1049	0.0461	0.0000	0.0000	0.0000
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5288	0.4751	0.4229	0.3815	0.3435	0.2805	0.2257	0.1772	0.1324	0.0649	0.0000	0.0000	0.0000	0.0000
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3919	0.3505	0.3118	0.2494	0.1946	0.1464	0.1024	0.0359	0.0000	0.0000	0.0000	0.0000
13	0.8787	0.7759	0.6810	0.6006	0.5303	0.4688	0.4150	0.3627	0.3212	0.2822	0.2212	0.1672	0.1194	0.0754	0.0100	0.0000	0.0000	0.0000	0.0000
14	0.8700	0.7579	0.6571	0.5775	0.5051	0.4423	0.3878	0.3355	0.2938	0.2544	0.1946	0.1413	0.0938	0.0514	0.0000	0.0000	0.0000	0.0000	0.0000
15	0.8613	0.7430	0.6419	0.5619	0.4891	0.4253	0.3692	0.3179	0.2761	0.2364	0.1772	0.1249	0.0774	0.0351	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.8528	0.7284	0.6232	0.5399	0.4681	0.3993	0.3416	0.2893	0.2474	0.2084	0.1506	0.1000	0.0574	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.8444	0.7142	0.6050	0.5134	0.4383	0.3714	0.3116	0.2593	0.2174	0.1794	0.1236	0.0740	0.0314	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2899	0.2376	0.1957	0.1584	0.1046	0.0560	0.0134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2701	0.2178	0.1759	0.1394	0.0876	0.0390	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.8195	0.6730	0.5537	0.4566	0.3789	0.3138	0.2534	0.2011	0.1592	0.1236	0.0728	0.0242	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.8114	0.6598	0.5376	0.4398	0.3629	0.2982	0.2378	0.1855	0.1436	0.1089	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	0.8034	0.6468	0.5219	0.4220	0.3458	0.2814	0.2210	0.1687	0.1268	0.0921	0.0413	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	0.7954	0.6342	0.5067	0.4057	0.3296	0.2654	0.2050	0.1527	0.1108	0.0761	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.7876	0.6217	0.4919	0.3901	0.3140	0.2498	0.1894	0.1371	0.0952	0.0605	0.0097	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.7798	0.6095	0.4776	0.3761	0.2993	0.2350	0.1746	0.1223	0.0804	0.0457	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0894	0.0574	0.0254	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0669	0.0460	0.0318	0.0221	0.0107	0.0053	0.0037	0.0026	0.0013	0.0007	0.0002	0.0001	0.0001
50	0.6800	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0035	0.0014	0.0009	0.0006	0.0003	0.0001	0.0001	0.0001	0.0001

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TABLE A-1 Present value of an annuity of \$1 per period for t periods $= [1 - 1/(1+i)^t]/i$

Interest Rate

Number of Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8686	0.8621	0.8475	0.8333	0.8066	0.7813	0.7576	0.7353
2	1.9704	1.9418	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6929	1.6497	1.6052	1.5652	1.5158	1.4658	1.3958	1.3258	1.2558	1.1858
3	2.9410	2.8939	2.8486	2.7761	2.7282	2.6790	2.6248	2.5771	2.5313	2.4869	2.4018	2.3216	2.2382	2.1569	2.0658	1.9658	1.8458	1.7258	1.6058	1.4858
4	3.9020	3.8077	3.7171	3.6298	3.5450	3.4631	3.3827	3.3121	3.2397	3.1698	3.0373	2.9137	2.8550	2.7892	2.6981	2.5887	2.4043	2.2410	2.0878	1.9658
5	4.8534	4.7135	4.5797	4.4818	4.3925	4.3124	4.1002	3.9927	3.8997	3.7928	3.6048	3.4331	3.3522	3.2743	3.1272	2.9908	2.7454	2.5320	2.3462	2.1807
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7655	4.6228	4.4859	4.3533	4.1114	3.8897	3.7946	3.6847	3.4976	3.3255	3.0205	2.7994	2.5942	2.3988
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1804	4.0586	3.8115	3.6048	3.2423	2.9370	2.6775	2.4550
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6388	4.4716	4.3065	4.0030	3.7310	3.3555	3.0482	2.7881	2.5403
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2468	6.0017	5.7682	5.3687	5.0021	4.7716	4.5655	4.2030	3.8710	3.4819	3.1542	2.8881	2.6003
10	9.4713	8.9836	8.5302	8.1108	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6682	5.2161	5.0188	4.8332	4.4041	4.1025	3.6619	3.2889	2.9304	2.6485
11	10.3676	9.7888	9.2526	8.7685	8.3164	7.8969	7.4987	7.1330	6.8002	6.4931	5.9377	5.4527	5.2337	5.0285	4.5580	4.3271	3.7757	3.3851	2.9776	2.6634
12	11.2551	10.5753	9.9540	9.3851	8.8683	8.3838	7.9427	7.5361	7.1607	6.8137	6.1644	5.6583	5.4206	5.1971	4.6832	4.4392	3.8514	3.4588	3.0133	2.7084
13	12.1337	11.3484	10.6350	9.9656	9.3398	8.7527	8.3077	7.9036	7.5289	7.1734	6.4235	5.8924	5.6331	5.3823	4.8095	4.5327	3.9124	3.4772	3.0004	2.7288
14	13.0037	12.1082	11.2861	10.5681	9.8988	9.2980	8.7455	8.2442	7.7882	7.3567	6.5282	6.0021	5.7245	5.4575	4.8216	4.5105	3.8516	3.4034	2.8909	2.7403
15	13.8651	12.8483	11.9379	11.1184	10.3797	9.7122	9.1079	8.5985	8.0907	7.6061	6.6708	6.1422	5.8474	5.5755	4.8716	4.5255	3.8219	3.3584	2.8164	2.7022
16	14.7179	13.5777	12.5611	11.6823	10.8378	10.1059	9.4466	8.8514	8.3128	7.8237	6.8740	6.2851	5.9542	5.6585	4.8924	4.5086	3.7533	3.2628	2.6882	2.6756
17	15.5623	14.2918	13.1661	12.1657	11.2741	10.4773	9.7682	9.1216	8.5438	8.0218	7.1186	6.4729	6.0472	5.7287	4.9076	4.4892	3.6814	3.1677	2.5691	2.7029
18	16.3983	14.9820	13.7595	12.6893	11.6996	10.8276	10.0891	9.3719	8.7556	8.2014	7.2497	6.4674	6.0280	5.6873	4.8095	4.3527	3.5016	2.9516	2.3189	2.7688
19	17.2280	15.6755	14.3238	13.1339	12.0953	11.1581	10.3358	9.6026	8.9501	8.3648	7.3658	6.5504	6.0920	5.7275	4.7816	4.2896	3.3987	2.8164	2.1500	2.7868
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4894	6.6231	6.2583	5.8728	4.8689	4.3427	3.4103	2.7858	2.0718	2.7718
21	18.8570	17.0112	15.4150	14.0292	12.8322	11.7641	10.8335	10.0168	9.2922	8.6487	7.5690	6.6670	6.3125	5.9071	4.8589	4.2984	3.3254	2.6814	1.9158	2.7734
22	19.6604	17.6590	16.0369	14.4611	13.1690	12.0416	11.0612	10.2007	9.4424	8.7716	7.6446	6.7429	6.3857	6.0113	4.9189	4.3204	3.2930	2.6158	1.8180	2.7746
23	20.4558	18.2922	16.6438	14.8568	13.4986	12.3034	11.2722	10.3741	9.5902	8.8832	7.7184	6.7924	6.4282	6.0228	4.8826	4.2645	3.2592	2.5418	1.7484	2.7764
24	21.2434	18.9139	17.2365	15.2470	13.7986	12.5504	11.4833	10.5828	9.7066	9.0047	7.7943	6.8351	6.4539	6.0375	4.8971	4.2871	3.2640	2.5519	1.7630	2.7780
25	22.0232	19.5235	17.8131	15.6221	14.0939	12.7834	11.6938	10.8743	9.9226	9.2070	7.9431	6.9229	6.4641	6.0371	4.9169	4.3076	3.2640	2.5620	1.7765	2.7795
30	25.8077	22.3955	19.6004	17.2820	15.5725	13.7648	12.4090	11.2578	10.2737	9.4289	8.0562	7.0027	6.5680	6.1172	5.0168	4.3789	3.1601	2.5083	1.7242	2.7775
40	32.8347	27.3555	23.1148	19.7828	17.1591	15.0463	13.3377	11.5246	10.1674	8.7791	8.2438	7.1050	6.6418	6.2385	5.5482	4.3965	3.1659	2.4712	1.7250	2.7778
50	39.1981	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605	6.2463	5.5541	4.3995	3.1668	2.4714	1.7250	2.7778

Continued on next page

APPENDIX A Mathematical Tables A-7

命題委員： (簽章) 年 月 日

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考試科目	會計學	所別	財務管理	考試時間	3月15日 星期日	第1節
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1. Stone Company sells TVs. The perpetual inventory was stated as \$28,500 on the books at December 31, 2006. At the close of the year, a new approach for compiling inventory was used and apparently a satisfactory cut-off for preparation of financial statements was not made. Some events that occurred are as follows.

- (1) TVs shipped to a customer January 2, 2007, costing \$5,000 were included in inventory at December 31, 2006. The sale was recorded in 2007.
- (2) TVs costing \$12,000 received December 30, 2006, were recorded as received on January 2, 2007.
- (3) TVs received during 2006 costing \$4,600 were recorded twice in the inventory account.
- (4) TVs shipped to a customer December 28, 2006, f.o.b. shipping point, which cost \$10,000, were not received by the customer until January, 2007. The TVs were included in the ending inventory.
- (5) TVs on hand that cost \$6,100 were never recorded on the books.

Instructions

Compute the correct inventory for the Stone Company at December 31, 2006. (15%)

2. Dahl Co. issued \$5,000,000 of 12%, 5-year convertible bonds on December 1, 2006 for \$5,020,800 plus accrued interest. The bonds were dated April 1, 2006 with interest payable April 1 and October 1. Bond premium is amortized each interest period on a straight-line basis. Dahl Co. has a fiscal year end of September 30.

On October 1, 2007, \$2,500,000 of these bonds were converted into 35,000 shares of \$15 par common stock. Accrued interest was paid in cash at the time of conversion.

Instructions

- (a) Prepare the entry to record the interest expense at April 1, 2007. Assume that interest payable was credited when the bonds were issued (round to nearest dollar). (10%)
- (b) Prepare the entry to record the conversion on October 1, 2007. Assume that the entry to record amortization of the bond premium and interest payment has been made. (10%)

命題委員：

(簽章)

考試科目	會計學	所別	財務管理	考試時間	3月15日 星期日	第1節
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3. The condensed financial statements of ABC Company for the years 2007 and 2008 are presented below:

ABC Company
Comparative Balance Sheets
As of December 31, 2008 and 2007

	2008	2007
Cash	\$ 420,000	\$ 120,000
Receivables (net)	460,000	300,000
Inventories	380,000	340,000
Plant and equipment	1,700,000	1,112,000
Accumulated depreciation	<u>(260,000)</u>	<u>(192,000)</u>
	<u>\$2,700,000</u>	<u>\$1,680,000</u>
Accounts payable	\$ 240,000	\$ 160,000
Dividends payable	-0-	40,000
Bonds payable	400,000	-0-
Common stock (\$10 par)	1,520,000	1,200,000
Retained earnings	<u>540,000</u>	<u>280,000</u>
	<u>\$2,700,000</u>	<u>\$1,680,000</u>

Additional data:

Market value of stock at 12/31/08 is \$80 per share.

ABC sold 32,000 shares of common stock at par on July 1, 2008.

ABC Company
Condensed Income Statement
For the Year Ended December 31, 2008

Sales	\$2,400,000
Cost of goods sold	<u>1,600,000</u>
Gross profit	800,000
Administrative and selling expense	<u>500,000</u>
Net income	<u>\$ 300,000</u>

Instructions

(1) Compute the following financial ratios for the year 2008 or at 12/31/08 (please show your calculations). (30%)

- | | |
|---------------------------|--|
| a. Current ratio | b. Acid test ratio |
| c. Receivables turnover | d. Inventory turnover |
| e. Profit margin on sales | f. Earnings per share |
| g. Price earnings ratio | h. Debt to total assets |
| i. Book value per share | j. Rate of return on common stock equity |

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(2) For each of the financial ratios calculated in (1), identify to which type of ratios it belongs: (10%)

- A. Liquidity.
- B. Leverage (coverage).
- C. Profitability.
- D. Asset management (activity).

(3) When analyzing a company's financial ratios, what are the criteria commonly used in evaluating them? (5%)

4. Presented below is the income statement of Fareast, Inc.:

Sales	\$380,000
Cost of goods sold	<u>225,000</u>
Gross profit	\$155,000
Operating expenses	<u>85,000</u>
Income before income taxes	70,000
Income taxes	<u>28,000</u>
Net income	<u>\$ 42,000</u>

In addition, the following information related to net *changes* in working capital is presented:

	<u>Debit</u>	<u>Credit</u>
Cash	\$12,000	
Trade accounts receivable	15,000	
Inventories		\$19,400
Salaries payable (operating expenses)	8,000	
Trade accounts payable		12,000
Income tax payable	3,000	

The company also indicates that depreciation expense for the year was \$16,700 and that the deferred tax liability account increased \$2,600.

Instructions

Prepare a schedule computing the net cash flow from operating activities that would be shown on a statement of cash flows of the Fareast, Inc. using the indirect method. (20%)

命題委員：

(簽章)

考試科目	經濟學	所別	財務管理學系	考試時間	3月15日 星期日	第一節
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- State whether the following are True (T), False (F) or Uncertain (U). Your answer **must** also have enough supporting explanation that is consistent with your choice.
 - (5 points) Lowering the effective tax rate will help to boost the economy.
 - (5 points) An increase in government spending will decrease private investment.
 - (5 points) Capital accumulation does not affect the natural output level in the long run. Only technological progress does.
 - (5 points) One of the reasons that deflation is bad to the economy is it discourages investment.
 - (5 points) The higher the saving rate, the lower consumption in steady state.

- To fight the most serious recession since World War II, our government attempts to boost consumer spending by issuing shopping vouchers worth NT\$3,600 per person. In the first press conference formally announcing this policy, Premier Liu Chao-shiuan asserted that this stimulus plan will contribute to 0.64% growth of 2009 GDP. Please answer the following questions about this policy with your knowledge from economic theories:
 - (5 points) Is this a fiscal or monetary policy? Please answer the question and give me a brief reason to support your answer.
 - (5 points) In the subsequent discussion, some government officials mentioned the “multiplier effect” of this policy. Please elaborate what this effect is with an economic model. (Some terms for you to use: GDP: Y , consumption: C , investment: I , government spending: G , exports: X , imports: M , propensity to consume: c , tax rate: t , interest rate: r , exchange rate: e . Variables you can use are not limited to the above list. State clearly the meaning of the other variables you use.)
 - (5 points) While a lot of Asian governments look very closely to the effect of this shopping voucher policy, economists are quite skeptical about it and some even believe there will be no effect at all. Please use the model in part b) to explain which link or links might not play out exactly as the government expects.
 - (5 points) Late Nobel laureate Milton Friedman brought up “permanent income hypothesis” to challenge the traditional view on the consumption function. Please explain what implication of this hypothesis has on the shopping voucher plan and the logic behind it with an economic model.
 - (5 points) Suppose it is March 2010 now and all the economic data for 2009 are all available to the public. Please tell me how you will evaluate whether the policy of the shopping voucher is successful. State carefully what your assumptions are and obstacles you have.

- Suppose that there are two firms, upstream and downstream, such that the upstream firm is the sole supplier of an input, K , to the downstream firm and the downstream firm is the only buyer of the input

備	考試題隨卷繳交
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from the upstream firm. The downstream firm sells its output in a perfectly competitive market at price $p=16$. The downstream firm also acts as a price taker on the input market for K . The upstream firm on the other hand acts as a monopolist in the market for K . Suppose that the downstream firm's production function is given by $x = K^{1/2}$ and it has no fixed costs of production. Suppose that the upstream firm's cost function is given by $C(K) = K$. Let's call the price of K as r .

- (5 points) Find the downstream firm's demand curve for the input K as a function of the price of K .
- (5 points) Given the downstream firm's demand curve find the quantity of K that maximizes the upstream firm's profits. Find the price associated with this quantity of K .
- (5 points) Find the profits of each firm.
- (5 points) If the downstream firm had the opportunity to purchase the upstream firm at a price 16, would it do so?

4. Sheila and Bruce each have an endowment of lemons and limes. Sheila has a bundle of 5 lemons and 12 limes and Bruce has a bundle of 5 lemons and 8 limes. They have identical preferences over bundles of lemons and limes and those preferences can be represented by the utility function $U(x, y) = xy$ where x represents the number of lemons and y represents the number of limes.

- (5 points) Draw the Edgeworth box representing the exchange economy of Sheila and Bruce. Indicate in your diagram the endowment point. Are their endowments an efficient allocation for this economy? If not why not? Illustrate a sample pair of indifference curves through the endowment point in your Edgeworth box diagram.
- (5 points) If Sheila and Bruce were to trade then what would be the pattern of trade? Find one trade that will make both Sheila and Bruce strictly better off. Illustrate the allocation of the results from this trade in your diagram.
- (5 points) Find the contract curve for this economy. Is the endowment point on the contract curve? In a new Edgeworth box diagram illustrate the contract curve.
- (5 points) An alternative criterion for selecting allocations in an economy is the *utilitarian criterion*. The utilitarian criterion chooses the allocations that give the highest sum of individual utilities. Would the allocations selected by the utilitarian criterion be Pareto efficient (in other words if an allocation generates the greatest sum of utilities would that allocation be efficient)? Give a brief explanation.
- (5 points) Given the contract curve that you found in part c) find the allocations that satisfy the utilitarian criterion. Would any of these allocations be the possible result of free trade between Sheila and Bruce given their initial endowments? Give a brief explanation.
- (5 points) Calculate each individual's offer curve.

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True/ False/ Uncertain Questions: Decide whether each statement is true, false, or uncertain, and justify your answer with a short argument.

1. Knowing the null distribution of a hypothesis test and the decision rule allows one to calculate the probability of type-I and type-II error. (7%)
2. For two nonzero probability events to be independent they must be based in two different experiments. If not, they are dependent. (7%)
3. If the joint pdf of x, y is $f(x,y) = ke^{xy}$ for $0 < x < 1$ and $0 < y < 1$, then x and y are not independent. (7%)
4. Assume the random variable x : "number of people entering a bank within one hour" has a Poisson distribution with $\lambda = 4$. Then, the random variable y : "number of people entering a bank within 30 minutes" has a Poisson distribution with $\lambda = 2$. (7%)
5. An interval estimation is just the probability that your estimator (say \bar{x}) is contained in a random interval with probability $1 - \alpha$, where α is the significance level. (7%)

Problem Solving: Answer the following four questions.

6. Assume that the length (in days) of pregnancy (that is the time from impregnation to the delivery of the child) is approximately normally distributed with $\mu = 260$ and $\sigma^2 = 144/\alpha$, where α is just a constant. A "potential" father is being sued for paternity. He claims he is not the father, and argues that he was out of the country during a period that began 275 days before the birth of the child and ended 245 days before the birth of the child. Assume the judge is willing to declare he is not the father only if there is at least 90% probability that the impregnation occurred during the period where the "potential" father was out of the country. For which values of α will the "potential" father be declare the legal father? Please also provide an intuitive explanation for your result. (20%)

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7. Assume that students' GRE results are normally distributed with mean (μ) 600 and standard deviation 60. A new studying method (GRE+Plus) has been developed and its authors claim that it improves the students' performance in the GRE. Assume you have data on the GRE score of 16 students that studied with GRE+Plus.
- A. Construct a 5% test of the null hypothesis that the GRE+Plus method does not affect the students' performance against the alternative hypothesis that it improves their performance. (15%)
- B. Explain, but do not compute, how your answer to part A. changes if you do not know the variance of the population distribution. (5%)

8. Let X and Y be random variables with probability density functions $f_X(x)$ and $f_Y(y)$, and a joint probability density function $f_{X,Y}(x,y)$. Show the following proposition is true. (10%)

$$\text{If } \text{Cov}(X, Y) = 0, \text{ then } \text{Corr}(X+Y, X-Y) = \frac{\text{Var}(X) - \text{Var}(Y)}{\text{Var}(X) + \text{Var}(Y)}.$$

9. Let X and Y be discrete random variables. Based on the following joint probability mass function, compute the variance of X , the expectation of $Z = XY$, and the covariance between X and Y . (15%)

$f(x,y)$	$Y=0$	$Y=1$
$X=0$.05	.35
$X=1$.35	.25

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考試科目	微積分	所別	財管研	考試時間	3月15日 星期日	第3節
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1. (12分) 求 $\lim_{x \rightarrow 1} \frac{x-1}{\sqrt[3]{x} + \sqrt{x} - 2}$

2. (12分) $x^3 + 3xy + y^2 = 5$, 求 $\frac{dy}{dx}$

3. (12分) 解 $\frac{dy}{dx} - xy = x$

4. (12分) 求 $\int \frac{x^4 + 1}{x(x^2 + 1)^2} dx$

5. (12分) 求 $\int \frac{x+1}{x^3-1} dx$

6. (16分) 若 $u + \ln u = xy$, 求 $\frac{\partial u}{\partial x}$, $\frac{\partial^2 u}{\partial y \partial x}$

7. (12分) 若 R_1 為 $0 \geq x \geq -1, 0 \leq y \leq x^2$ 所圍成區域, R_2 為 $2 \geq x \geq 0, 0 \leq y \leq x^2$ 所圍成區域, $R = R_1 \cup R_2$, 求 $\iint_R y^{\frac{2}{3}} dx dy$

8. (12分) 求 $\sum_{k=1}^{\infty} \frac{k^2 - 3k - 2}{k^2(k+1)^2}$

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