考試科目	統計學A	所別	金融學系金融組	考試時間	3月7日(日)第二節

1. Do you agree with Tony's reasoning below? Explain why you do or do not agree. Refer to the Central Limit Theorem in your explanation. (10%)

Tony: "When a balanced die is rolled, each of the numbers 1, 2, 3, 4, 5, and 6 has an equal chance of showing up. So, if I roll the die 50 times and find the mean of the 50 numbers, the mean has the same chance of falling between 1 and 2 as it has of falling between 3 and 4."

2. Compute and fill in the blanks. (9%)

A balanced die is rolled 240 times. You wish to find the probability that the number of ones is at most 50. This probability can be estimated by finding the area that is to the left of ____ under the normal curve with μ = ____ and σ = ___.

3. A researcher performed a study to determine whether an association exists between sex and blood type. He obtained the following sample data. (15%)

		Blood Type				
		O	A	B	AB	Total
Sex	Female	157	143	40	20	360
	Male	143	127	35	15	320
	Total	300	270	75	35	680

At the 5% significance level, do the data provide sufficient evidence to conclude that an association exists between sex and blood type?

4. A coach uses a new technique in training middle distance runners. The times, in seconds, for 8 different athletes to run 800 meters before and after this training are shown below.

Athlete	A	B	C	D	E	F	G	H
Before	116.7	119.1	116.8	108.7	114.3	108.2	113.1	108.2
After	117.3	117.8	114.4	109.5	112.5	108.3	109.5	104.3

At the 5% significance level, do the data provide sufficient evidence that the training helps to improve times for the 800 meters? Use the P-value approach. (12%)

5. Multiple choice. Choice the one alternative that best completes the statement or answers the question. (15%)

(a) Explain the difference between the interquartile range and the range. Which is more sensitive to extreme values? Explain your thinking.

(5%)

備註	試題隨卷繳交

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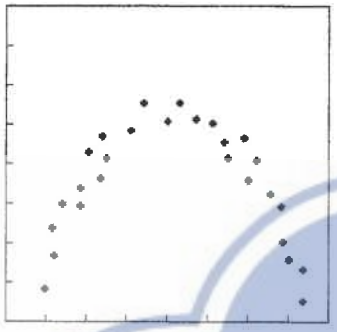
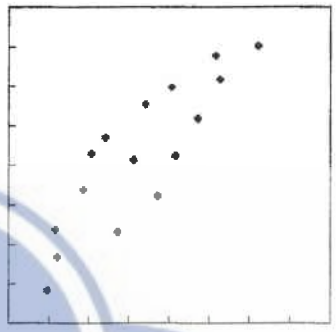
(b) For which of the following sets of data points can you reasonably determine a regression line? (5%)

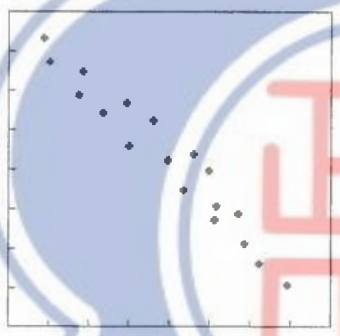
1)



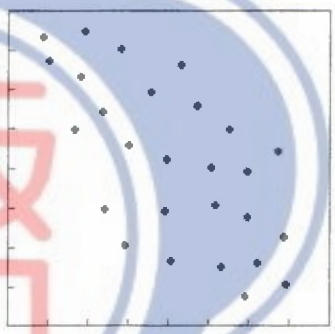
2)



3)

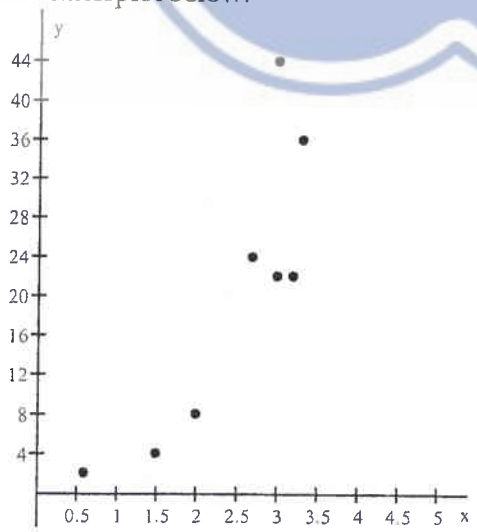


4)



A) 2, 3, and 4
B) 2 and 3
C) All of the above
D) None of the above

(c) The relationship between two quantities x and y is examined, and the association is shown in the scatterplot below. (5%)



Could a regression line be reasonably used to describe this data?.
A) Yes
B) No

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6. For the data given in Table 1. (22%)
   (a) Calculate the least squares regression line for these data. (5%)
   (b) Find the value of $\hat{\sigma}^2$. (4%)
   (c) Test $H_0 : \beta = 0$ against $H_1 : \beta \neq 0$ at the $\alpha = 0.05$ by setting up the ANOVA table. (8%)
   (d) Find a 95% prediction interval for Y when $x = 2,3,4$. (5%)

Table 1

x	y	x	y
2.0	1.3	2.7	3.0
3.3	3.3	4.0	4.0
3.7	3.3	3.7	3.0
2.0	2.0	3.0	2.7
2.3	1.7	2.3	3.0

7. A manufacturer claims that the mean amount of juice in its 16 ounces bottles is 16.1 ounces A consumer advocacy group wants to perform a hypothesis test to determine whether the mean amount is actually less than this. Preliminary data analyses indicate that it is reasonable to apply a Z-tess. The hypotheses are (17%)

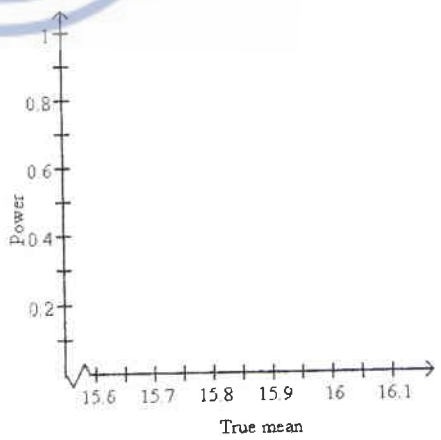
H_0: μ = 16.1 ounces

H_1: μ < 16.1 ounces.

Assume that σ = 0.8 ounces, n = 60, and the significance level is 0.01. Find the probability of a Type II error and the power for μ = 15.6, 15.7, 15.8, 15.9, 16.0, 16.1. (12%)

True mean μ	P(Type II error) β	Power 1 - β
15.6		
15.7		
15.8		
15.9		
16.0		
16.1		

Power Curve (5%)



備註	試題隨卷繳交

考試科目	統計學A	所別	金融學系金融組	考試時間	3月7日(日)第二節

Normal Distribution

The following table presents the standard normal distribution. The probabilities tabled are

$$P(X \le x) = \Phi(x) = \int_{-\infty}^{x} \frac{1}{\sqrt{2\pi}} e^{-w^2/2}\, dw.$$

Note that only the probabilities for $x \ge 0$ are tabled. To obtain the probabilities for $x < 0$, use the identity $\Phi(-x) = 1 - \Phi(x)$.

x	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998
3.5	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998

備註	試題隨卷繳交

考試科目	統計學A	所別	金融學系金融組	考試時間	3月7日(日)第二節

F-Distribution

The following table presents selected quantiles of the F-distribution; i.e, the values x such that

$$P(X \le x) = \int_0^x \frac{\Gamma[(r_1+r_2)/2](r_1/r_2)^{r_1/2} w^{r_1/2-1}}{\Gamma(r_1/2)\Gamma(r_2/2)(1+r_1 w/r_2)^{(r_1+r_2)/2}}\, dw,$$

for selected numerator and denominator degrees of freedom r_1 and r_2, respectively.

$P(X \le x)$	r_2	r_1 = 1	2	3	4	5	6	7	8
0.950	1	161.450	199.500	215.710	224.580	230.160	233.990	236.770	238.880
0.975	1	647.790	799.500	864.160	899.580	921.850	937.110	948.220	956.660
0.990	1	4052.180	4999.500	5403.350	5624.580	5763.650	5858.990	5928.360	5981.070
0.950	2	18.510	19.000	19.160	19.250	19.300	19.330	19.350	19.370
0.975	2	38.510	39.000	39.170	39.250	39.300	39.330	39.360	39.370
0.990	2	98.500	99.000	99.170	99.250	99.300	99.330	99.360	99.370
0.950	3	10.130	9.550	9.280	9.120	9.010	8.940	8.890	8.850
0.975	3	17.440	16.040	15.440	15.100	14.880	14.730	14.620	14.540
0.990	3	34.120	30.820	29.460	28.710	28.240	27.910	27.670	27.490
0.950	4	7.710	6.940	6.590	6.390	6.260	6.160	6.090	6.040
0.975	4	12.220	10.650	9.980	9.600	9.360	9.200	9.070	8.980
0.990	4	21.200	18.000	16.690	15.980	15.520	15.210	14.980	14.800
0.950	5	6.610	5.790	5.410	5.190	5.050	4.950	4.880	4.820
0.975	5	10.010	8.430	7.760	7.390	7.150	6.980	6.850	6.760
0.990	5	16.260	13.270	12.060	11.390	10.970	10.670	10.460	10.290
0.950	6	5.990	5.140	4.760	4.530	4.390	4.280	4.210	4.150
0.975	6	8.810	7.260	6.600	6.230	5.990	5.820	5.700	5.600
0.990	6	13.750	10.920	9.780	9.150	8.750	8.470	8.260	8.100
0.950	7	5.590	4.740	4.350	4.120	3.970	3.870	3.790	3.730
0.975	7	8.070	6.540	5.890	5.520	5.290	5.120	4.990	4.900
0.990	7	12.250	9.550	8.450	7.850	7.460	7.190	6.990	6.840
0.950	8	5.320	4.460	4.070	3.840	3.690	3.580	3.500	3.440
0.975	8	7.570	6.060	5.420	5.050	4.820	4.650	4.530	4.430
0.990	8	11.260	8.650	7.590	7.010	6.630	6.370	6.180	6.030
0.950	9	5.120	4.260	3.860	3.630	3.480	3.370	3.290	3.230
0.975	9	7.210	5.710	5.080	4.720	4.480	4.320	4.200	4.100
0.990	9	10.560	8.020	6.990	6.420	6.060	5.800	5.610	5.470
0.950	10	4.960	4.100	3.710	3.480	3.330	3.220	3.140	3.070
0.975	10	6.940	5.460	4.830	4.470	4.240	4.070	3.950	3.850
0.990	10	10.040	7.560	6.550	5.990	5.640	5.390	5.200	5.060
0.950	11	4.840	3.980	3.590	3.360	3.200	3.090	3.010	2.950
0.975	11	6.720	5.260	4.630	4.280	4.040	3.880	3.760	3.660
0.990	11	9.650	7.210	6.220	5.670	5.320	5.070	4.890	4.740
0.950	12	4.750	3.890	3.490	3.260	3.110	3.000	2.910	2.850
0.975	12	6.550	5.100	4.470	4.120	3.890	3.730	3.610	3.510
0.990	12	9.330	6.930	5.950	5.410	5.060	4.820	4.640	4.500

Chi-square Distribution

The following table presents selected quantiles of chi-square distribution; i.e, the values x such that

$$P(X \le x) = \int_0^x \frac{1}{\Gamma(r/2)2^{r/2}} w^{r/2-1} e^{-w/2}\, dw,$$

for selected degrees of freedom r.

	$P(X \le x)$							
r	0.010	0.025	0.050	0.100	0.900	0.950	0.975	0.990
1	0.000	0.001	0.455	0.016	2.706	3.841	5.024	6.635
2	0.020	0.051	1.386	0.211	4.605	5.991	7.378	9.210
3	0.115	0.216	2.366	0.584	6.251	7.815	9.348	11.345
4	0.297	0.484	3.357	1.064	7.779	9.488	11.143	13.277
5	0.554	0.831	4.351	1.610	9.236	11.070	12.833	15.086
6	0.872	1.237	5.348	2.204	10.645	12.592	14.449	16.812
7	1.239	1.690	6.346	2.833	12.017	14.067	16.013	18.475
8	1.646	2.180	7.344	3.490	13.362	15.507	17.535	20.090
9	2.088	2.700	8.343	4.168	14.684	16.919	19.023	21.666
10	2.558	3.247	9.342	4.865	15.987	18.307	20.483	23.209
11	3.053	3.816	10.341	5.578	17.275	19.675	21.920	24.725
12	3.571	4.404	11.340	6.304	18.549	21.026	23.337	26.217

備註	試題隨卷繳交

考試科目	經濟學	所別	商學院	考試時間	3月7日(星期日) 第一節

Multiple Choice (1.7 points each)

本科目之選擇題請在答案卡上作答

Identify the letter of the choice that best completes the statement or answers the question.

Mark each answer clearly with a No. 2 pencil on the Scantron form.

1. Which of the following would shift the demand curve for new textbooks to the right?
   (a) A fall in the price of paper used in publishing texts
   (b) A fall in the price of equivalent used textbooks
   (c) An increase in the number of students attending college
   (d) A fall in the price of new textbooks

2. Which of the following will NOT cause a shift in the supply of gasoline?
   (a) An increase in the wage rate of refinery workers
   (b) A decrease in the price of gasoline
   (c) An improvement in oil refining technology
   (d) A decrease in the price of crude oil

3. We observe that both the price of and quantity sold of golf balls are rising over time. This is due to
   (a) continual improvements in the technology used to produce golf balls.
   (b) increases in the price of golf clubs over time.
   (c) decreases in membership fees for country clubs with golf facilities.
   (d) more stringent professional requirements on the quality of golf balls requiring producers to use more expensive raw materials.

4. Mikey is very picky and insists that his mom make his breakfast with equal parts of cereal and apple juice – any other combination will end up on the floor. Cereal costs 4 cents per tablespoon and apple juice costs 6 cents per tablespoon. If Mikey's mom budgets $8 per month for Mikey's breakfast, how much cereal and juice does she buy?
   (a) 40 tablespoons each of cereal and juice
   (b) 80 tablespoons each of cereal and juice
   (c) 40 tablespoons of cereal and 75 tablespoons of juice
   (d) 100 tablespoons of cereal and 67 tablespoons of juice

5. Any risk-averse individual would always
   (a) take a 10% chance at $100 rather than a sure $10.

備註	試題隨卷繳交

考試科目	經濟學	所別	商學院	考試時間	3月7日(星期日) 第一節

(b) take a 50% chance at \$4 and a 50% chance at \$1 rather than a sure \$1.

(c) take a sure \$10 rather than a 10% chance at \$100.

(d) take a sure \$1 rather than a 50% chance at \$4 and a 50% chance at losing \$1.

6. A farmer uses K units of machinery and L hours of labor to produce Q tons of corn, with the following production function $Q = L^{0.5} + K^{0.75}$. This production function exhibits

(a) decreasing returns to scale for all output levels.

(b) constant returns to scale for all output levels.

(c) increasing returns to scale for all output levels.

(d) no clear pattern of returns to scale.

7. If a competitive firm's marginal costs always increases with output, then at the profit maximizing output level, producer surplus is

(a) zero because marginal costs equal marginal revenue.

(b) zero because price equals marginal costs.

(c) positive because price exceeds average variable costs.

(d) positive because price exceeds average total costs.

8. At the current level of output, long-run marginal cost is \$50 and long-run average cost is \$75. This implies that

(a) there are neither economies nor diseconomies of scale.

(b) there are economies of scale.

(c) there are diseconomies of scale.

(d) the cost-output elasticity is greater than one.

9. How are a firm's short-run and long-run average cost curves related?

(a) SRAC is greater than LRAC, which forces the LRAC curve to be upward sloping.

(b) SRAC and LRAC slope up or down together, but SRAC is always the steeper of the two curves.

(c) The SRAC curve is tangent to and lies above the LRAC curve.

(d) The LRAC curve just touches the SRAC curve at its minimum point.

10. A firm is currently producing 200 units of output using 60 hours of labor and 80 hours of capital. The marginal product of labor is 12 units of output per hour, and the marginal product of capital is 15 units of output per hour. If the wage rate is \$6 per hour and the rental rate is \$3 per hour, then

(a) the firm's use of labor and capital is cost-efficient.

備註	試題隨卷繳交

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(b) the firm should use more labor and less capital.

(c) the firm should use more capital and less labor.

(d) we cannot determine if the firm's use of inputs is efficient without more information.

11. There are three firms in Green Valley. Initially, each firm emits 4 units of pollution. The following table shows the total costs for each of three firms (A, B, and C) to eliminate units of pollution from their production processes. For example, for Firm A to eliminate one unit of pollution, it would cost \$1, and for Firm A to eliminate two units of pollution, it would cost a total of \$3.

	Firms		
Unit to be eliminated	A	B	C
One unit	1	4	4
Two units	3	8	9
Three units	6	12	15
Four units	10	16	22

Suppose the government wants to reduce pollution to 9 units, so it gives each firm 3 tradable pollution permits. Which of the following statement is true?

(a) Firm A will buy permit(s) from firms B and C.

(b) Firms A and B will buy permit(s) from firm C.

(c) Firm B will buy permit(s) from firms A and C.

(d) Firms B and C will buy permit(s) from firm A.

12. Consider a monopolist facing two consumers whose preferences for its product are given by the following demand curves: $P_1 = 20 - Q_1$ and $p_2 = 12 - 2Q_2$. The monopolist's fixed cost is equal to 0 and marginal cost is equal to 4. Suppose the monopolist can not tell the consumers apart. What is the maximum profit if the monopolist uses a two-part tariff pricing scheme?

(a) 32

(b) 64

(c) 128

(d) 144

13. A monopolistically competitive firm is currently producing 10 units of output. At this level of output the firm is charging a price equal to \$10, has marginal revenue equal to \$6,

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has marginal cost equal to $6, and has average total cost equal to $12. From this information we can infer that

(a) the firm can increase its profit by producing less.

(b) the profits of the firm are negative.

(c) firms are likely to enter this market in the long run.

(d) the firm's fixed cost must be greater than 20.

14. It is commonly argued that national defense is a public good. Nevertheless, many weapons used by the R.O.C. military are produced by U.S. private firms. We can conclude that

(a) resources would be used more efficiently if the U.S. firms produced the weapons.

(b) resources would be used more efficiently if private firms provided national defense.

(c) weapons are rival in consumption and excludable.

(d) national defense is rival in consumption and excludable.

15. Some economists argue that a resale price maintenance agreement is not anti-competitive because

(a) suppliers are never able to exercise noncompetitive market power.

(b) if a supplier has market power, it can exert that power through the wholesale price rather than the retail price.

(c) retail markets are inherently noncompetitive.

(d) resale price maintenance prevents the retailers from competing on price.

16. A monetary expansion combined with an increase in government spending will cause

(a) an increase in output with ambiguous effects on the interest rate.

(b) a reduction in output with ambiguous effects on the interest rate.

(c) an increase in the interest rate with ambiguous effects on output.

(d) a reduction in the interest rate with ambiguous effects on output.

17. Which of the following event is most likely to occur when the interest rate increases?

(a) the money demand curve shifts to the right

(b) the money demand curve shifts to the left

(c) the price of bonds will fall

(d) the price of bonds will rise

18. The recent recession may increase the marginal propensity to save, which tends to cause

(a) an increase in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

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(b) a reduction in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

(c) an increase in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

(d) a reduction in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

19. According to the theory of liquidity preference, which variable adjusts to balance the supply and demand for money?

(a) interest rate

(b) monetary base

(c) quantity of output

(d) price level

20. Which of the following events will trigger a rightward shift of the aggregate demand curve?

(a) an increase in the price level

(b) an increase in tax

(c) an increase in money supply

(d) an increase in the nominal wage

21. Without an accommodating monetary policy, a push by workers to get higher wages will cause

(a) hyperinflation.

(b) higher unemployment.

(c) cost-push inflation.

(d) demand-pull inflation.

22. If the government issues debt to the public to finance its spending, the monetary base will _____ and the money supply will _____.

(a) decrease; increase

(b) increase; increase

(c) increase; decrease

(d) not change; not change

23. If the expected path of one-year interest rates over the next five years is 5 percent, 6 percent, 8 percent, 9 percent, and 7 percent, then according to the expectations theory

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today's interest rate on the five-year bond should be

(a) 4 percent.

(b) 5 percent.

(c) 6 percent.

(d) 7 percent.

24. If a bank has $80,000 of checkable deposits, a required reserve ratio of 20 percent on these deposits, and it holds $40,000 in reserves, then the maximum deposit outflow it can sustain without altering its balance sheet is

(a) $20,000.

(b) $30,000.

(c) $40,000.

(d) $25,000.

25. The most important advantage of discount policy is that the central bank can use it to

(a) control the money supply.

(b) punish banks that have deficient reserves.

(c) perform its role as lender of last resort.

(d) precisely control the monetary base.

26. The nominal exchange rate is the

(a) nominal interest rate in one country divided by the nominal interest rate in the other country.

(b) price of a good in one country divided by the price of the same good in another.

(c) rate at which a person can trade the currency of one country for the currency of another.

(d) the number of goods a person can trade for a similar good in another country.

27. If the direct nominal exchange rate, S, is domestic dollar per foreign currency, the domestic price is P, and the foreign price is p^*, the direct real exchange rate is defined as

(a) $(SP^*)/P$.

(b) $(SP)/P^*$.

(c) $P^*/(SP)$.

(d) $P/(SP^*)$.

28. If purchasing-power parity holds, then the value of the

(a) real exchange rate is equal to one.

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(b) nominal exchange rate is equal to one.

(c) real exchange rate is equal to the nominal exchange rate.

(d) real exchange rate is equal to the difference in inflation rates between the two countries.

29. Which of the following statements is incorrect for an open economy?

(a) A country can have a trade deficit, trade surplus, or balanced trade.

(b) A country that has a trade deficit has positive net capital outflow.

(c) Net exports must equal net capital outflow.

(d) National saving must equal domestic investment plus net capital outflow.

30. The People's Republic of China has had a large trade surplus in recent years. Which of the following is the most likely explanation of this surplus?

(a) China has a high rate of inflation, which reduces the value of its currency.

(b) China has a large supply of labor, so low wages give it a competitive edge.

(c) China has many trade barriers, which restrict the ability of other countries to sell their products in China.

(d) China has a large amount of saving relative to domestic investment.

Numerical/algebraic problems and short-essay questions

Please answer the following questions IN SEQUENCE. All questions may be answered in EITHER Chinese OR English.

1. Suppose the market for wine can be described by the following equations:

$$\text{Demand}: P = 60 - Q, \quad \text{Supply}: P = 2Q - 30,$$

where P is the price in dollars per bottle and Q is the quantity in millions of bottles.

(a) (4 points) What is the equilibrium price and quantity? Now suppose the government imposes a tax of $3 per bottle to reduce wine consumption and raise government revenues. What will the new equilibrium quantity of wine be?

(b) (4 points) Calculate the effects of the tax on consumer surplus, producer surplus and social welfare.

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2. (8 points) Customers attending baseball games at the local arena must pay for parking on the grounds and then pay for a ticket needed to enter the arena. If the arena manager knows that the customers' identical demands can be expressed collectively as $P = 25 - 0.000625Q$. How much of a parking fee could the management collect if the marginal cost of providing entertainment were a constant MC = \$10 per seat?

3. Consider a market where two firms produce a homogeneous good. The inverse market demand is given by $p = 24 - q_1 - q_2$ where q_1 and q_2 denote the quantities produced by firm 1 and 2, respectively. While there are no production costs incurred by firm 1, the cost function of firm 2 is given by

$$C_2(q_2) = \begin{cases} 0 & \text{if } q_2 = 0 \\ 49 & \text{if } q_2 > 0. \end{cases}$$

Suppose that the firms set quantities simultaneously.

(a) (4 points) Draw the best response curves.

(b) (4 points) Find all pure strategy Nash equilibria.

4. During the recent financial turmoil, the U.S. M1 money multiplier kept slipping and it even dropped below 1 in the early 2009.

(a) (2 points) What are the likely causes of this historically low level of the money multiplier?

(b) (3 points) How would such a low money multiplier affect the effectiveness of the monetary policy applied by the Federal Reserve Bank?

(c) (3 points) Suppose you work for Paul Volcker, the Chair of the U.S. President's Economic Recovery Advisory Board, in the capacity of an economic advisor. Please use the AD-AS model and other models, if necessary, to explain how you would suggest the government to fight the recession.

5. Recently as a result of the Federal Reserve's actions to save the financial institutions and markets, the monetary base of United States has been exploding. However, the increase in the broader monetary aggregate such as M2 is much more moderate.

(a) (2 points) Please suggest reasons explaining the M2's moderate growth despite the dramatic increase in monetary base.

(b) (2 points) Suppose you are a bank with \$100,000 in vault cash. When the central bank conducts open market operation to sell government bonds, you decide to use the \$100,000 to purchase these bonds to earn interest. How would your action affect the monetary base?

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(c) (2 points) Or, you simply decide to put the $100,000 in the reserve account of your bank at the central bank. How would this action affect the monetary base?

(d) (2 points) Please comment on the following statement: "When reserves pay interest (as the Fed now does), the monetary base becomes an uninteresting economic statistic."

6. (a) (4 points) "Faster population growth might increase a country's GDP, but it makes everyone poorer." Is the above statement true, false, or uncertain, and why?

(b) (5 points) Can capital accumulation itself sustain growth in GDP per capita in the long term? Why or why not?

備註	試題隨卷繳交

考試科目	財務管理	所別	金融所 4/21 金融組 4/22 財務2組	考試時間	3月7日(日)第1節

I. Explain the following terms briefly (each 3 points, total 18 points)

(1) Maturity premium

(2) Yield to maturity

(3) Sensitivity analysis

(4) DOL

(5) Defensive stock

(6) Cumulative voting system

II. Computational problems (each 6 points, total 36 points)

(1) After reading the fine print in your credit card agreement, you find that the "low" interest rate is actually an 18% APR, or 1.5% per month. Now, to make you feel even worse, calculate the effective annual interest rate.

(2) Show the breakdown of stock price between a firm's assets that are already in place and its present value of growth opportunities, assuming: next year's expected earnings equal $5.00, 13% required rate of return, 17% return on equity, 45% plowback ratio.

(3) Low-energy light bulbs typically cost $3.50, have a life of 9 years, and use about $1.60 of electricity a year. Conventional light bulbs are cheaper to buy, for they cost only $.50. On the other hand, they last only about a year and use about $6.60 of energy. If the real discount rate is 5%, what is the relative cost of the two products?

(4) Modern Artifacts can produce keepsakes that will be sold for $80 each. Nondepreciation fixed costs are $1,000 per year and variable costs are $60 per unit. If the project requires an initial investment of $3,000 and is expected to last for 5 years and the firm pays no taxes, what are the accounting and economic break-even levels of sales? The initial investment will be depreciated straight-line over 5 years to a final value of zero, and the discount rate is 10 percent.

(5) Calculate the nominal and real returns for the following corporate bond investment: Purchased for $840 one year ago, 4% coupon rate, sold for $894. The inflation rate was 5.0% during the year. Would you consider this an appropriate investment if Treasury bills had yielded 6.0% over the same period?

(6) A firm with an asset beta of 1.0 has a debt beta of zero when 20% of the capital structure is debt, and is estimated to have a debt beta of .15 if debt went as high as 50% of the capital structure. What is the range for the equity beta under these circumstances?

備註	試題隨卷繳交

考試科目	財務管理	所別	金融所 4/21 金融組 4/22 財務工程組.	考試時間	3月7日(日)第1節

III. Short Answer Questions (each 6 points, total 12 points)

(1) Why is beta thought to be a more relevant measure of risk than standard deviation for a diversified investor?

(2) The use of NPV as an investment criterion is said to be more reliable than using IRR. Discuss potential problems with the use of IRR.

IV. Questions (total 34 points)

(1) Apex Corp. has current liabilities of $2 million, a current ratio of 3.0, a quick ratio of 2.0, and a cash ratio of .75. Given this information, answer the following about the firm's liquidity:

a. What is the value of inventory? (4 points)

b. What is the value of receivables? (4 points)

c. What will happen to each of the three ratios if $1 million in current liabilities is refunded with long-term debt? (6 points)

(2) Executive Cheese has issued debt with a market value of $100 million and has outstanding 15 million shares with a market price of $10 a share. It now announces that it intends to issue a further $60 million of debt and to use the proceeds to buy back common stock. Debtholders, seeing the extra risk, mark the value of the existing debt down to $70 million.

a. How is the market price of the stock affected by the announcement? (4 points)

b. How many shares can the company buy back with the $60 million of new debt that it issues? (4 points)

c. What is the market value of the firm (equity plus debt) after the changes in capital structure? (4 points)

d. What is the debt ratio after the change in structure? (4 points)

e. Who (if anyone) gains or loses? (4 points)

備註	試題隨卷繳交

考試科目	統計學B	所別	4122 金融學系財務工程組	試時間	3月7日(日)第二節

1. The Kelley Blue Book provides information on wholesale and retail prices of cars. Following are age and price data for 10 randomly selected Corvettes between 1 and 6 years old. Here x, denotes age in years and y denotes price, in hundreds of dollars. (25%)

x	6	6	6	2	2	5	4	5	1	4
y	270	260	275	405	364	295	335	308	405	305

(a) Obtain a point estimate for the mean price of all 4-year-old Corvettes. (5%)

(b) Determine a 90% confidence interval for mean price of all 4-year-old Corvettes. (6%)

(c) Find the predicted price of a 4-year-old Corvette. (6%)

(d) Determine a 90% prediction interval for the price of a 4-year-old Corvette. (8%)

2. A researcher performed a study to determine whether an association exists between sex and blood type. He obtained the following sample data. (15%)

		Blood Type				
		O	A	B	AB	Total
Sex	Female	157	143	40	20	360
	Male	143	127	35	15	320
	Total	300	270	75	35	680

At the 5% significance level, do the data provide sufficient evidence to conclude that an association exists between sex and blood type?

3. For a particular instant lottery the better can determine immediately whether a purchased ticket is a winning ticket. Suppose that the probability of winning ticket is $p = 0.1$. (10%)

(a) What is the expected number of tickets that must be purchased in order to find a winning ticket? (5%)

(b) Give the probability that more than 10 tickets must be purchased to find a winning ticket. (5%)

備註	試題隨卷繳交

考試科目	統計學 B	所別	4122 金融學系財務理組	考試時間	3 月 7 日(日)第 二 節

4. Define the p.d.f. and give the values of mean and variance when the moment-generating function of X is defined by (18%)

   (a) $M(t) = \frac{1}{3} + \left(\frac{2}{3}\right)e^{t}$. (6%)

   (b) $M(t) = \left(0.35 + 0.65e^{t}\right)^{10}$. (6%)

   (c) $M(t) = e^{3.5t+12t^2}$. (6%)

5. Answer the following questions. (22%)
   (a) Write down the simple linear regression model and model assumption. (6%)
   (b) Find the mean and variance of simple linear regression model. (10%)
   (c) Find the variance of least squares estimator for slope. (6%)

6. Do you agree with Tony's reasoning below? Explain why you do or do not agree. Refer to the Central Limit Theorem in your explanation. (10%)

Tony: "When a balanced die is rolled, each of the numbers 1, 2, 3, 4, 5, and 6 has an equal chance of showing up. So, if I roll the die 50 times and find the mean of the 50 numbers, the mean has the same chance of falling between 1 and 2 as it has of falling between 3 and 4."

備註	試題隨卷繳交

考試科目	統計學B	所別	金融學系財務工程組 4122	考試時間	3月7日(日)第二節

Normal Distribution

The following table presents the standard normal distribution. The probabilities tabled are

$$P(X \le x) = \Phi(x) = \int_{-\infty}^{x} \frac{1}{\sqrt{2\pi}} e^{-w^2/2}\, dw.$$

Note that only the probabilities for $x \ge 0$ are tabled. To obtain the probabilities for $x < 0$, use the identity $\Phi(-x) = 1 - \Phi(x)$.

x	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998
3.5	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998

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F-Distribution

The following table presents selected quantiles of the F-distribution; i.e, the values x such that

$$P(X \le x) = \int_0^x \frac{\Gamma[(r_1+r_2)/2](r_1/r_2)^{r_1/2} w^{r_1/2-1}}{\Gamma(r_1/2)\Gamma(r_2/2)(1+r_1 w/r_2)^{(r_1+r_2)/2}}\, dw,$$

for selected numerator and denominator degrees of freedom r_1 and r_2, respectively.

$P(X \le x)$	r_2	r_1 = 1	2	3	4	5	6	7	8
0.950	1	161.450	199.500	215.710	224.580	230.160	233.990	236.770	238.880
0.975	1	647.790	799.500	864.160	899.580	921.850	937.110	948.220	956.660
0.990	1	4052.180	4999.500	5403.350	5624.580	5763.650	5858.990	5928.360	5981.070
0.950	2	18.510	19.000	19.160	19.250	19.300	19.330	19.350	19.370
0.975	2	38.510	39.000	39.170	39.250	39.300	39.330	39.360	39.370
0.990	2	98.500	99.000	99.170	99.250	99.300	99.330	99.360	99.370
0.950	3	10.130	9.550	9.280	9.120	9.010	8.940	8.890	8.850
0.975	3	17.440	16.040	15.440	15.100	14.880	14.730	14.620	14.540
0.990	3	34.120	30.820	29.460	28.710	28.240	27.910	27.670	27.490
0.950	4	7.710	6.940	6.590	6.390	6.260	6.160	6.090	6.040
0.975	4	12.220	10.650	9.980	9.600	9.360	9.200	9.070	8.980
0.990	4	21.200	18.000	16.690	15.980	15.520	15.210	14.980	14.800
0.950	5	6.610	5.790	5.410	5.190	5.050	4.950	4.880	4.820
0.975	5	10.010	8.430	7.760	7.390	7.150	6.980	6.850	6.760
0.990	5	16.260	13.270	12.060	11.390	10.970	10.670	10.460	10.290
0.950	6	5.990	5.140	4.760	4.530	4.390	4.280	4.210	4.150
0.975	6	8.810	7.260	6.600	6.230	5.990	5.820	5.700	5.600
0.990	6	13.750	10.920	9.780	9.150	8.750	8.470	8.260	8.100
0.950	7	5.590	4.740	4.350	4.120	3.970	3.870	3.790	3.730
0.975	7	8.070	6.540	5.890	5.520	5.290	5.120	4.990	4.900
0.990	7	12.250	9.550	8.450	7.850	7.460	7.190	6.990	6.840
0.950	8	5.320	4.460	4.070	3.840	3.690	3.580	3.500	3.440
0.975	8	7.570	6.060	5.420	5.050	4.820	4.650	4.530	4.430
0.990	8	11.260	8.650	7.590	7.010	6.630	6.370	6.180	6.030
0.950	9	5.120	4.260	3.860	3.630	3.480	3.370	3.290	3.230
0.975	9	7.210	5.710	5.080	4.720	4.480	4.320	4.200	4.100
0.990	9	10.560	8.020	6.990	6.420	6.060	5.800	5.610	5.470
0.950	10	4.960	4.100	3.710	3.480	3.330	3.220	3.140	3.070
0.975	10	6.940	5.460	4.830	4.470	4.240	4.070	3.950	3.850
0.990	10	10.040	7.560	6.550	5.990	5.640	5.390	5.200	5.060
0.950	11	4.840	3.980	3.590	3.360	3.200	3.090	3.010	2.950
0.975	11	6.720	5.260	4.630	4.280	4.040	3.880	3.760	3.660
0.990	11	9.650	7.210	6.220	5.670	5.320	5.070	4.890	4.740
0.950	12	4.750	3.890	3.490	3.260	3.110	3.000	2.910	2.850
0.975	12	6.550	5.100	4.470	4.120	3.890	3.730	3.610	3.510
0.990	12	9.330	6.930	5.950	5.410	5.060	4.820	4.640	4.500

Chi-square Distribution

The following table presents selected quantiles of chi-square distribution; i.e, the values x such that

$$P(X \le x) = \int_0^x \frac{1}{\Gamma(r/2)2^{r/2}} w^{r/2-1} e^{-w/2}\, dw,$$

for selected degrees of freedom r.

	$P(X \le x)$					
r	0.010	0.025	0.050	0.100	0.900	0.950
1	0.000	0.001	0.455	0.016	2.706	3.841
2	0.020	0.051	1.386	0.211	4.605	5.991
3	0.115	0.216	2.366	0.584	6.251	7.815
4	0.297	0.484	3.357	1.064	7.779	9.488
5	0.554	0.831	4.351	1.610	9.236	11.070
6	0.872	1.237	5.348	2.204	10.645	12.592
7	1.239	1.690	6.346	2.833	12.017	14.067
8	1.646	2.180	7.344	3.490	13.362	15.507
9	2.088	2.700	8.343	4.168	14.684	16.919
10	2.558	3.247	9.342	4.865	15.987	18.307
11	3.053	3.816	10.341	5.578	17.275	19.675
12	3.571	4.404	11.340	6.304	18.549	21.026

備註	試題隨卷繳交

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Multiple Choice (1.7 points each)

本科目之選擇題請在答案卡上作答

Identify the letter of the choice that best completes the statement or answers the question.

Mark each answer clearly with a No. 2 pencil on the Scantron form.

1. Which of the following would shift the demand curve for new textbooks to the right?
   (a) A fall in the price of paper used in publishing texts
   (b) A fall in the price of equivalent used textbooks
   (c) An increase in the number of students attending college
   (d) A fall in the price of new textbooks

2. Which of the following will NOT cause a shift in the supply of gasoline?
   (a) An increase in the wage rate of refinery workers
   (b) A decrease in the price of gasoline
   (c) An improvement in oil refining technology
   (d) A decrease in the price of crude oil

3. We observe that both the price of and quantity sold of golf balls are rising over time. This is due to
   (a) continual improvements in the technology used to produce golf balls.
   (b) increases in the price of golf clubs over time.
   (c) decreases in membership fees for country clubs with golf facilities.
   (d) more stringent professional requirements on the quality of golf balls requiring producers to use more expensive raw materials.

4. Mikey is very picky and insists that his mom make his breakfast with equal parts of cereal and apple juice – any other combination will end up on the floor. Cereal costs 4 cents per tablespoon and apple juice costs 6 cents per tablespoon. If Mikey's mom budgets $8 per month for Mikey's breakfast, how much cereal and juice does she buy?
   (a) 40 tablespoons each of cereal and juice
   (b) 80 tablespoons each of cereal and juice
   (c) 40 tablespoons of cereal and 75 tablespoons of juice
   (d) 100 tablespoons of cereal and 67 tablespoons of juice

5. Any risk-averse individual would always
   (a) take a 10% chance at $100 rather than a sure $10.

備註	試題隨卷繳交

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(b) take a 50% chance at \$4 and a 50% chance at \$1 rather than a sure \$1.

(c) take a sure \$10 rather than a 10% chance at \$100.

(d) take a sure \$1 rather than a 50% chance at \$4 and a 50% chance at losing \$1.

6. A farmer uses K units of machinery and L hours of labor to produce Q tons of corn, with the following production function $Q = L^{0.5} + K^{0.75}$. This production function exhibits

(a) decreasing returns to scale for all output levels.

(b) constant returns to scale for all output levels.

(c) increasing returns to scale for all output levels.

(d) no clear pattern of returns to scale.

7. If a competitive firm's marginal costs always increases with output, then at the profit maximizing output level, producer surplus is

(a) zero because marginal costs equal marginal revenue.

(b) zero because price equals marginal costs.

(c) positive because price exceeds average variable costs.

(d) positive because price exceeds average total costs.

8. At the current level of output, long-run marginal cost is \$50 and long-run average cost is \$75. This implies that

(a) there are neither economies nor diseconomies of scale.

(b) there are economies of scale.

(c) there are diseconomies of scale.

(d) the cost-output elasticity is greater than one.

9. How are a firm's short-run and long-run average cost curves related?

(a) SRAC is greater than LRAC, which forces the LRAC curve to be upward sloping.

(b) SRAC and LRAC slope up or down together, but SRAC is always the steeper of the two curves.

(c) The SRAC curve is tangent to and lies above the LRAC curve.

(d) The LRAC curve just touches the SRAC curve at its minimum point.

10. A firm is currently producing 200 units of output using 60 hours of labor and 80 hours of capital. The marginal product of labor is 12 units of output per hour, and the marginal product of capital is 15 units of output per hour. If the wage rate is \$6 per hour and the rental rate is \$3 per hour, then

(a) the firm's use of labor and capital is cost-efficient.

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(b) the firm should use more labor and less capital.

(c) the firm should use more capital and less labor.

(d) we cannot determine if the firm's use of inputs is efficient without more information.

11. There are three firms in Green Valley. Initially, each firm emits 4 units of pollution. The following table shows the total costs for each of three firms (A, B, and C) to eliminate units of pollution from their production processes. For example, for Firm A to eliminate one unit of pollution, it would cost \$1, and for Firm A to eliminate two units of pollution, it would cost a total of \$3.

	Firms		
Unit to be eliminated	A	B	C
One unit	1	4	4
Two units	3	8	9
Three units	6	12	15
Four units	10	16	22

Suppose the government wants to reduce pollution to 9 units, so it gives each firm 3 tradable pollution permits. Which of the following statement is true?

(a) Firm A will buy permit(s) from firms B and C.

(b) Firms A and B will buy permit(s) from firm C.

(c) Firm B will buy permit(s) from firms A and C.

(d) Firms B and C will buy permit(s) from firm A.

12. Consider a monopolist facing two consumers whose preferences for its product are given by the following demand curves: $P_1 = 20 - Q_1$ and $p_2 = 12 - 2Q_2$. The monopolist's fixed cost is equal to 0 and marginal cost is equal to 4. Suppose the monopolist can not tell the consumers apart. What is the maximum profit if the monopolist uses a two-part tariff pricing scheme?

(a) 32

(b) 64

(c) 128

(d) 144

13. A monopolistically competitive firm is currently producing 10 units of output. At this level of output the firm is charging a price equal to \$10, has marginal revenue equal to \$6,

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has marginal cost equal to $6, and has average total cost equal to $12. From this information we can infer that

(a) the firm can increase its profit by producing less.

(b) the profits of the firm are negative.

(c) firms are likely to enter this market in the long run.

(d) the firm's fixed cost must be greater than 20.

14. It is commonly argued that national defense is a public good. Nevertheless, many weapons used by the R.O.C. military are produced by U.S. private firms. We can conclude that

(a) resources would be used more efficiently if the U.S. firms produced the weapons.

(b) resources would be used more efficiently if private firms provided national defense.

(c) weapons are rival in consumption and excludable.

(d) national defense is rival in consumption and excludable.

15. Some economists argue that a resale price maintenance agreement is not anti-competitive because

(a) suppliers are never able to exercise noncompetitive market power.

(b) if a supplier has market power, it can exert that power through the wholesale price rather than the retail price.

(c) retail markets are inherently noncompetitive.

(d) resale price maintenance prevents the retailers from competing on price.

16. A monetary expansion combined with an increase in government spending will cause

(a) an increase in output with ambiguous effects on the interest rate.

(b) a reduction in output with ambiguous effects on the interest rate.

(c) an increase in the interest rate with ambiguous effects on output.

(d) a reduction in the interest rate with ambiguous effects on output.

17. Which of the following event is most likely to occur when the interest rate increases?

(a) the money demand curve shifts to the right

(b) the money demand curve shifts to the left

(c) the price of bonds will fall

(d) the price of bonds will rise

18. The recent recession may increase the marginal propensity to save, which tends to cause

(a) an increase in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

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(b) a reduction in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

(c) an increase in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

(d) a reduction in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

19. According to the theory of liquidity preference, which variable adjusts to balance the supply and demand for money?

(a) interest rate

(b) monetary base

(c) quantity of output

(d) price level

20. Which of the following events will trigger a rightward shift of the aggregate demand curve?

(a) an increase in the price level

(b) an increase in tax

(c) an increase in money supply

(d) an increase in the nominal wage

21. Without an accommodating monetary policy, a push by workers to get higher wages will cause

(a) hyperinflation.

(b) higher unemployment.

(c) cost-push inflation.

(d) demand-pull inflation.

22. If the government issues debt to the public to finance its spending, the monetary base will _____ and the money supply will _____.

(a) decrease; increase

(b) increase; increase

(c) increase; decrease

(d) not change; not change

23. If the expected path of one-year interest rates over the next five years is 5 percent, 6 percent, 8 percent, 9 percent, and 7 percent, then according to the expectations theory

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today's interest rate on the five-year bond should be

(a) 4 percent.

(b) 5 percent.

(c) 6 percent.

(d) 7 percent.

24. If a bank has $80,000 of checkable deposits, a required reserve ratio of 20 percent on these deposits, and it holds $40,000 in reserves, then the maximum deposit outflow it can sustain without altering its balance sheet is

(a) $20,000.

(b) $30,000.

(c) $40,000.

(d) $25,000.

25. The most important advantage of discount policy is that the central bank can use it to

(a) control the money supply.

(b) punish banks that have deficient reserves.

(c) perform its role as lender of last resort.

(d) precisely control the monetary base.

26. The nominal exchange rate is the

(a) nominal interest rate in one country divided by the nominal interest rate in the other country.

(b) price of a good in one country divided by the price of the same good in another.

(c) rate at which a person can trade the currency of one country for the currency of another.

(d) the number of goods a person can trade for a similar good in another country.

27. If the direct nominal exchange rate, S, is domestic dollar per foreign currency, the domestic price is P, and the foreign price is p^*, the direct real exchange rate is defined as

(a) $(SP^*)/P$.

(b) $(SP)/P^*$.

(c) $P^*/(SP)$.

(d) $P/(SP^*)$.

28. If purchasing-power parity holds, then the value of the

(a) real exchange rate is equal to one.

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(b) nominal exchange rate is equal to one.

(c) real exchange rate is equal to the nominal exchange rate.

(d) real exchange rate is equal to the difference in inflation rates between the two countries.

29. Which of the following statements is incorrect for an open economy?

(a) A country can have a trade deficit, trade surplus, or balanced trade.

(b) A country that has a trade deficit has positive net capital outflow.

(c) Net exports must equal net capital outflow.

(d) National saving must equal domestic investment plus net capital outflow.

30. The People's Republic of China has had a large trade surplus in recent years. Which of the following is the most likely explanation of this surplus?

(a) China has a high rate of inflation, which reduces the value of its currency.

(b) China has a large supply of labor, so low wages give it a competitive edge.

(c) China has many trade barriers, which restrict the ability of other countries to sell their products in China.

(d) China has a large amount of saving relative to domestic investment.

Numerical/algebraic problems and short-essay questions

Please answer the following questions IN SEQUENCE. All questions may be answered in EITHER Chinese OR English.

1. Suppose the market for wine can be described by the following equations:

$$\text{Demand}: P = 60 - Q, \quad \text{Supply}: P = 2Q - 30,$$

where P is the price in dollars per bottle and Q is the quantity in millions of bottles.

(a) (4 points) What is the equilibrium price and quantity? Now suppose the government imposes a tax of $3 per bottle to reduce wine consumption and raise government revenues. What will the new equilibrium quantity of wine be?

(b) (4 points) Calculate the effects of the tax on consumer surplus, producer surplus and social welfare.

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2. (8 points) Customers attending baseball games at the local arena must pay for parking on the grounds and then pay for a ticket needed to enter the arena. If the arena manager knows that the customers' identical demands can be expressed collectively as $P = 25 - 0.000625Q$. How much of a parking fee could the management collect if the marginal cost of providing entertainment were a constant MC = \$10 per seat?

3. Consider a market where two firms produce a homogeneous good. The inverse market demand is given by $p = 24 - q_1 - q_2$ where q_1 and q_2 denote the quantities produced by firm 1 and 2, respectively. While there are no production costs incurred by firm 1, the cost function of firm 2 is given by

$$C_2(q_2) = \begin{cases} 0 & \text{if } q_2 = 0 \\ 49 & \text{if } q_2 > 0. \end{cases}$$

Suppose that the firms set quantities simultaneously.

(a) (4 points) Draw the best response curves.

(b) (4 points) Find all pure strategy Nash equilibria.

4. During the recent financial turmoil, the U.S. M1 money multiplier kept slipping and it even dropped below 1 in the early 2009.

(a) (2 points) What are the likely causes of this historically low level of the money multiplier?

(b) (3 points) How would such a low money multiplier affect the effectiveness of the monetary policy applied by the Federal Reserve Bank?

(c) (3 points) Suppose you work for Paul Volcker, the Chair of the U.S. President's Economic Recovery Advisory Board, in the capacity of an economic advisor. Please use the AD-AS model and other models, if necessary, to explain how you would suggest the government to fight the recession.

5. Recently as a result of the Federal Reserve's actions to save the financial institutions and markets, the monetary base of United States has been exploding. However, the increase in the broader monetary aggregate such as M2 is much more moderate.

(a) (2 points) Please suggest reasons explaining the M2's moderate growth despite the dramatic increase in monetary base.

(b) (2 points) Suppose you are a bank with \$100,000 in vault cash. When the central bank conducts open market operation to sell government bonds, you decide to use the \$100,000 to purchase these bonds to earn interest. How would your action affect the monetary base?

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(c) (2 points) Or, you simply decide to put the $100,000 in the reserve account of your bank at the central bank. How would this action affect the monetary base?

(d) (2 points) Please comment on the following statement: "When reserves pay interest (as the Fed now does), the monetary base becomes an uninteresting economic statistic."

6. (a) (4 points) "Faster population growth might increase a country's GDP, but it makes everyone poorer." Is the above statement true, false, or uncertain, and why?

(b) (5 points) Can capital accumulation itself sustain growth in GDP per capita in the long term? Why or why not?

備註	試題隨卷繳交

考試科目	財務管理	所別	金融所 4/21 4/22	考試時間	3月7日(日)第1節

財務2稽四.

I. Explain the following terms briefly (each 3 points, total 18 points)

(1) Maturity premium

(2) Yield to maturity

(3) Sensitivity analysis

(4) DOL

(5) Defensive stock

(6) Cumulative voting system

II. Computational problems (each 6 points, total 36 points)

(1) After reading the fine print in your credit card agreement, you find that the "low" interest rate is actually an 18% APR, or 1.5% per month. Now, to make you feel even worse, calculate the effective annual interest rate.

(2) Show the breakdown of stock price between a firm's assets that are already in place and its present value of growth opportunities, assuming: next year's expected earnings equal $5.00, 13% required rate of return, 17% return on equity, 45% plowback ratio.

(3) Low-energy light bulbs typically cost $3.50, have a life of 9 years, and use about $1.60 of electricity a year. Conventional light bulbs are cheaper to buy, for they cost only $.50. On the other hand, they last only about a year and use about $6.60 of energy. If the real discount rate is 5%, what is the relative cost of the two products?

(4) Modern Artifacts can produce keepsakes that will be sold for $80 each. Nondepreciation fixed costs are $1,000 per year and variable costs are $60 per unit. If the project requires an initial investment of $3,000 and is expected to last for 5 years and the firm pays no taxes, what are the accounting and economic break-even levels of sales? The initial investment will be depreciated straight-line over 5 years to a final value of zero, and the discount rate is 10 percent.

(5) Calculate the nominal and real returns for the following corporate bond investment: Purchased for $840 one year ago, 4% coupon rate, sold for $894. The inflation rate was 5.0% during the year. Would you consider this an appropriate investment if Treasury bills had yielded 6.0% over the same period?

(6) A firm with an asset beta of 1.0 has a debt beta of zero when 20% of the capital structure is debt, and is estimated to have a debt beta of .15 if debt went as high as 50% of the capital structure. What is the range for the equity beta under these circumstances?

備註	試題隨卷繳交

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III. Short Answer Questions (each 6 points, total 12 points)

(1) Why is beta thought to be a more relevant measure of risk than standard deviation for a diversified investor?

(2) The use of NPV as an investment criterion is said to be more reliable than using IRR. Discuss potential problems with the use of IRR.

IV. Questions (total 34 points)

(1) Apex Corp. has current liabilities of $2 million, a current ratio of 3.0, a quick ratio of 2.0, and a cash ratio of .75. Given this information, answer the following about the firm's liquidity:

a. What is the value of inventory? (4 points)

b. What is the value of receivables? (4 points)

c. What will happen to each of the three ratios if $1 million in current liabilities is refunded with long-term debt? (6 points)

(2) Executive Cheese has issued debt with a market value of $100 million and has outstanding 15 million shares with a market price of $10 a share. It now announces that it intends to issue a further $60 million of debt and to use the proceeds to buy back common stock. Debtholders, seeing the extra risk, mark the value of the existing debt down to $70 million.

a. How is the market price of the stock affected by the announcement? (4 points)

b. How many shares can the company buy back with the $60 million of new debt that it issues? (4 points)

c. What is the market value of the firm (equity plus debt) after the changes in capital structure? (4 points)

d. What is the debt ratio after the change in structure? (4 points)

e. Who (if anyone) gains or loses? (4 points)

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