考試科目	經濟學	系所別	商學院共同科	考試時間	2 月 3 日(五) 第 二 節

I、Multiple Choice (1 point each)

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

1. John has an income of $\$m$ per week. He consumes only two commodities, x and y. Let p_x be the price of x and p_y be the price of y. If he consumes more than $\bar{X}$ units of x per week, he can use coupons to buy the next Z units of x at a price of $p_x(1-s)$. If he buys more than $\bar{X}+Z$, he has to pay the full price p_x for additional units. His weekly income is greater than $p_x[\bar{X}+(1-s)Z]$. The maximum amount of x that he can buy per week is

A. $\bar{X}+\frac{mZ}{p_x}$.
B. $\frac{m+\bar{X}}{p_x}+Z$.
C. $\frac{m}{p_x}+sZ$.
D. $Z-\frac{(m+p_x)}{1-s}p_x$.

2. Professor Lin gives 3 midterm exams. Only the highest one counts. You are taking his course and have a 60 on your first exam. Let x_2 be your score on the second exam and x_3 be your score on the third exam. If you draw your indifference curves for scores on the second and third exams with x_2 represented by the horizontal axis and x_3 represented by the vertical axis, then your indifference curve through the point $(x_2, x_3) = (50, 70)$ is

A. ㄱ-shaped with a kink where $x_2 = x_3$.
B. three line segments, one vertical, one horizontal, and one running from $(70, 60)$ to $(60, 70)$.
C. a straight line, running from $(0, 70)$ to $(70, 0)$.
D. an L-shaped curve with its point at $(50, 70)$.

3. Consider the utility function to be $\min\{x, yz\}$. The price of x is \$1, the price of y is \$4, and the price of z is \$4. Henri's income is \$20. How many units of x does Henri demand?

A. 5
B. 20/9
C. 2
D. 3

4. Suppose that the production function is $f(x_1, x_2) = (x_1^a + x_2^a)^b + c$, where a, b, and c are positive constants. For what values of a, b, and c does the firm have constant returns to scale?

A. For any values of a if $b < 1$ and $c = 0$.
B. For any values of a and c if $ab < 1$.
C. For any values of a and c if $ab = 1$.
D. For any value of c if $a < 1$ and $b < 1$.

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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5. Roommate 1's utility function is $3X_1 + G$ and Roommate 2's utility function is X_2G, where G is their expenditures on the public goods they share in their apartment and where X_1 and X_2 are their respective private consumption expenditures. The total amount they have to spend on private goods and public goods is \$30,000. They agree on a Pareto optimal pattern of expenditures in which the amount that is spent on Roommates 1's private consumption is \$5,000. How much do they spend on public goods?

A. \$1,000
B. \$15,000
C. \$7,999
D. \$18,000

6. Consider a monopolistically competitive market in an economy moves from autarky to free trade. Which of the following statements is (are) correct?
(i) The domestic demand curve for a domestic firm will shift to the right.
(ii) The price elasticity of domestic demand that a domestic firm faces will increase in the absolute value.
(iii) The domestic firm's markup will decrease.

A. Only (i)
B. (i) and (ii)
C. (ii) and (iii)
D. (i) and (iii)

7. Which of the following curves is not affected by the existence of diminishing marginal product of input factors?

A. The average fixed cost curve.
B. The average variable cost curve.
C. The marginal cost curve.
D. The variable cost curve.

8. Suppose the shutdown point of a firm in a perfectly competitive market is that the market price is \$10. At the shutdown point, the average total cost of the firm is \$20. What is the average fixed cost?

A. 5
B. 10
C. 15
D. Need more information.

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

考試科目	經濟學	系所別	商學院共同科	考試時間	2月3日(五)第二節

9. The information in the table below shows the total demand for gasoline in a small urban market. Assume that each gasoline provider pays a fixed cost of $100,000 (per year) to operate in the market area and that the marginal cost of providing the gasoline to a household is zero.

Quantity	Quantity (per year)
0	120
3000	90
4000	80
5000	70
6000	60
7000	40
8000	30

Assume any agreement between two firms are not enforceable and two firms compete in quantity. What is the market price under the Nash equilibrium according to the table?

A. 80
B. 70
C. 60
D. 40

10. In a monopolistically competitive market, if the long run marginal cost curve intersects the long run marginal revenue cost curve and long run average cost curve when the marginal cost is $10 and $20 respectively, which of the following choices is a possible long run equilibrium market price?

A. 5
B. 10
C. 15
D. 21

11. How would a decrease in the frictional unemployment affect the long-run Phillips curve?

A. It would shift the long-run Phillips curve right.
B. It would shift the long-run Phillips curve left.
C. There would be an upward movement along a given long-run Phillips curve.
D. There would be a downward movement along a given long-run Philips curve.

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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12. In the Unites States, the CPI was 80 in 1980 and is 300 today, then $100 today purchases the same amount of goods and services as
A. $26.67 purchased in 1980.
B. $33.33 purchased in 1980.
C. $40.00 purchased in 1980.
D. $80.00 purchased in 1980.

13. If total spending rises from one year to the next, then which of the following could not be true?
A. the economy is producing a smaller output of goods and services, and goods and services are selling at higher prices.
B. the economy is producing a larger output of goods and services, and goods and services are selling at lower prices.
C. the economy is producing a larger output of goods and services, and goods and services are selling at higher prices.
D. the economy is producing a smaller output of goods and services, and goods and services are selling at lower prices.

14. You put money into an account that earns a 3 percent real interest rate. The inflation rate is 2 percent, and the tax rate on your interest income is 20 percent. What is your after-tax real rate of interest?
A. 2.0 percent.
B. 2.4 percent.
C. 3.0 percent.
D. 3.6 percent.

15. Time inconsistency will cause the
A. short-run Phillips curve to be higher than otherwise.
B. short-run Phillips curve to be lower the otherwise.
C. long-run Phillips curve to be farther to the right than otherwise.
D. long-run Phillips curve to be farther left than otherwise.

16. Which of the following policies should be used to close an inflationary GDP gap?
A. A decrease in government purchases.
B. An increases in taxes.
C. A decrease in money supply.
D. All of the above.

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考試科目	經濟學	系所別	商學院共同科	考試時間	2月3日(五)第二節

17. If a country has a current account balance of -$120 and a capital and financial account balance of $80, there will be _____ in official reserves of _____ .

A. an increase; $40.
B. an increase; $200
C. a decrease; $40
D. a decrease; $200

18. When the central bank in a country decreases the money supply, its

A. price level rises and its currency appreciates relative to other currencies in the world.
B. price level falls and its currency appreciates relative to other currencies in the world.
C. price level falls and its currency depreciates relative to other currencies in the world.
D. price level rises and its currency depreciates relative to other currencies in the world.

19. The Ricardo-Barro effect states that government deficits

A. increase the equilibrium real interest rate, crowding out investment.
B. decrease private saving, the equilibrium real interest rate and investment.
C. increase private saving and have no effect on the equilibrium real interest rate and investment.
D. decrease the equilibrium real interest rate and increase investment.

20. Suppose potential GDP exceeds real GDP in a short-run macroeconomic equilibrium. If aggregate demand does not change, then the

A. short-run aggregate supply curve will shift rightward as the money wage rate decreases.
B. short-run aggregate supply curve will shift leftward as the money wage rate increases.
C. long-run aggregate supply curve will shift leftward as the money wage rate increases.
D. long-run aggregate supply curve will shift leftward as the money wage rate decreases.

Ⅱ. Problems and Short-essay Questions

1. Consider the following utility function.

$$u(x_1, x_2) = \begin{cases} 3x_1 + x_2 & \text{if } x_1 > 2x_2, \\ \frac{7}{5}x_1 + \frac{21}{5}x_2 & \text{otherwise.} \end{cases}$$

A. (7 points) Calculate the marginal rate of substitution.

B. (6 points) (9,1) and (c,6) sit on the same indifference curve. What is the value of c?

C. (7 points) Let m stand for the consumer's income. Please calculate the demand function as a function of p_1, p_2, and m.

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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2. Suppose Firm A is the only seller of Product A in a closed economy. The firm faces the following demand, marginal revenue, and marginal cost curves.

$$\text{Demand: } P = 70 - Q$$
$$\text{Marginal Revenue: } MR = 70 - 2Q$$
$$\text{Marginal Cost: } MC = 10 + Q$$
$$\text{Total cost: } TC = 210 + 10Q + 0.5Q^2$$

A. (4 points) Please calculate the efficient loss due to the monopoly.

Suppose the government of the economy decides to open the market to the world. The world price of Product A is \$30.

B. (4 points) How many units of Product A will the economy export or import in the short run?

C. (4 points) How many units of Product A will the economy export or import in the long run?

D. (8 points) In the long run, if the government wants to maintain that both the domestic producer and foreign importers coexist in the domestic market, the government should tax or subsidize the importers? What is the minimum value of the per-unit tax or the per-unit subsidy to achieve this goal?

3. Consider an economy where the representative consumer has a utility function $U = CF$ over clothing C and food F, and has an income of \$40.

A. (8 points) Suppose in year one (the base year), the prices of clothing and food are $p_C^1 = 2$ and $p_F^1 = 2$, respectively. What is the consumer's optimal consumption bundle? How much utility does the consumer receive from this bundle?

B. (6 points) Suppose in year two, the prices of clothing and food become $p_C^2 = 2.5$ and $p_F^2 = 10$, and the consumer's income increases in proportion to the consumer price index (CPI). What is the consumer's optimal consumption bundle?

C. (6 points) What is the minimum income in year two that enables the consumer to achieve the same level of utility as in year one? How much does the CPI overstate actual inflation due to the *substitution bias*?

4. In an economy, autonomous consumption expenditure is \$100 billion, investment is \$300 billion, and government expenditure is \$150 billion. The marginal propensity to consume is 0.90 and net taxes are \$150 billion. Exports are \$450 billion and imports are \$550 billion. Assume that net taxes and imports are autonomous and the price level is fixed.

A. (5 points) What is the value of consumption multiplier?

B. (10 points) Calculate the equilibrium aggregate expenditure.

C. (5 points) If government expenditure increases by \$200 million, what is the change in the economy's equilibrium real GDP?

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

考試科目	統計學	系所別	企業管理研究所(MBA學位學程)/甲組	考試時間	2月 3日(五) 第四節

Single choice questions (2.5 points each, 100 points in total) 選擇題請在答案卡上作答，否則不予計分。

Some upper quantiles for N(0,1): $z_{0.005} = 2.57$, $z_{0.01} = 2.33$, $z_{0.025} = 1.96$, $z_{0.05} = 1.65$, $z_{0.1} = 1.28$

1. A coffee shop randomly selected 150 customers from those who visited the shop last month. It was found that 80 out of the 150 selected customers were interested in purchasing the prepaid coffee card. What is the population?
   (a) the selected 150 customers
   (b) those who visited the shop last month
   (c) the 80 customers who were interested in purchasing the prepaid card
   (d) none of the above
2. Which of the following variables is ratio-scaled?
   (a) Number of customers
   (b) Credit card number
   (c) Ratings of movies
   (d) none of the above
3. The retail sales (in billions) of top 10 companies are 385, 242, 125, 101, 98, 96, 87, 72, 65, 58. Find the range of the data.
   (a) 97
   (b) 327
   (c) 385
   (d) none of the above
4. (continued) What is the shape of the above retail sales data?
   (a) symmetric
   (b) left-skewed
   (c) right-skewed
   (d) none of the above
5. A manager of a retail store is interested in the shopping experience for customers. To investigate, an employee is asked to stand by the store entrance and survey every 15th customer who leaves. What kind of sampling method is it?
   (a) stratified sampling
   (b) snowball sampling
   (c) systematic sampling
   (d) none of the above
6. A company has a service standard which requires the employees to make eye contact and greet customers by their first names. The company has two branch stores, A and B. The manager would like to take a sample of employees and evaluate their performance. To make sure the sample is representative, the manager plans to take a sample proportional to the relative size of the store. What kind of sampling method is it?
   (a) stratified sampling
   (b) snowball sampling
   (c) systematic sampling
   (d) none of the above
7. (continued) The performance is rated as "poor", "fair", "good" and "excellent." What is the name of the following table?

	poor	fair	good	excellent
A	5	20	50	45
B	0	10	25	25

   (a) decision table
   (b) confusion table
   (c) contingency table
   (d) none of the above
8. (continued) Based on the above results, find the probability that a randomly selected employee will perform excellently.
   (a) 1/3
   (b) 5/12
   (c) 7/18
   (d) 9/25

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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9. An article is inspected for sentence check by two sentence checkers: A and B. If a sentence is correct, then neither sentence checkers will correct it. If a sentence error is present, it will be corrected by checker A with a probability of 0.7, and by checker B with a probability of 0.55. Suppose that, given that A corrects an error, the probability that B corrects this error is 0.5. If a sentence is incorrect, what is the probability that it will be corrected by at least one of these two sentence checkers?
   (a) 0.75
   (b) 0.8
   (c) 0.9
   (d) none of the above
10. (continued) Suppose 10 percent of the sentences in an article are flawed. If a sentence is passed by both sentence checkers, what is the probability that it actually has an error?
   (a) 1/91
   (b) 1/95
   (c) 1/96
   (d) none of the above
11. A random variable X has the pdf $f(x) = x^3$ if $0 < x \leq 1$, and 1/4 if $1 < x \leq 4$. Find the median of X.
   (a) 1
   (b) 2
   (c) 4
   (d) none of the above
12. Suppose that the number of customers arriving at a bank between 10:00am to noon follows a Poisson distribution with mean $\lambda = 30$, and that 20% of these customers are to make loans. How many customers are expected to arrive between 10:00-11:00am for making loans?
   (a) 3
   (b) 6
   (c) 9
   (d) none of the above
13. Suppose that the time a customer waits in line to begin checking out in a supermarket follows an exponential distribution with a mean of 1 minutes. Find the probability that a customer will wait for more than 3 minutes.
   (a) e^{-3}
   (b) $1 - e^{-3}$
   (c) $1 - e^{-1}$
   (d) none of the above
14. The difference between a population parameter and its corresponding sample statistic is called
   (a) margin of error
   (b) sampling error
   (c) systematic error
   (d) none of the above
15. A random sample of 200 freshmen in Taiwan shows that the costs for textbooks approximately follow a normal distribution with a mean of NT$ 4200 and a standard deviation of NT$ 500. Let SE denote the standard error of mean, and d denote the margin or error at 95% level of confidence. Which of the following is correct?
   (a) $d = 56.5$
   (b) $d = z_{0.025}$*SE
   (c) $d = z_{0.025} * \text{SE}/\sqrt{200}$
   (d) none of the above
16. (continued) Determine the required sample size if the margin of error is around 50.
   (a) 465
   (b) 385
   (c) 275
   (d) none of the above

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考試科目	統計學	系所別	企業管理研究所(MBA學位學程)/甲組	考試時間	2月 3日(五) 第四節

17. The probability of accepting a lot with poor quality is
    (a) consumer's risk
    (b) producer's risk
    (c) systematic risk
    (d) none of the above

18. A study was conducted to estimate π, the proportion of college students who drink coffee daily. Let p_n be the sample proportion based on a random sample of size n. Determine the variance of p_n.
    (a) $n\pi$.
    (b) $\pi(1-\pi)$
    (c) $\pi(1-\pi)/n$
    (d) none of the above

19. Baby Tom was good at predicting the winner of World Cup games. It was claimed that he was doing better than random guess. To test the claim, the 8 matches in the round of 16 were presented to Baby Tom. Let π denote the probability of correctly predicting the result of a match, and p denote the sample proportion of correct prediction. State H_0 and H_1.
    (a) H_0: $p = 0.5$ v.s. H_1: $p > 0.5$
    (b) H_0: $\pi = 0.5$ v.s. H_1: $\pi > 0.5$
    (c) H_0: $p = 0.5$ v.s. H_1: $p < 0.5$
    (d) H_0: $\pi = 0.5$ v.s. H_1: $\pi < 0.5$

20. (continued) Suppose that all of the 8 matches were correctly predicted. Determine the p-value.
    (a) 0.5
    (b) 0.5^8
    (c) $9 * 0.5^8$
    (d) none of the above

21. (continued) Suppose that you have concluded that Baby Tom was doing better than random guess, but actually this decision was in error. Which of the following statement is correct?
    (a) It committed a Type I error.
    (b) It committed a Type II error.
    (c) It was a systematic error.
    (d) None of the above.

22. A manufacturer is developing a new method of assembling a cell phone. The current method requires a mean time of 3.5 minutes with a standard deviation of 1.2 minutes. We are to test whether the new method is faster. State H_0 and H_1.
    (a) H_0: $\mu \geq 3.5$ v.s. H_1: $\mu < 3.5$
    (b) H_0: $\mu \leq 3.5$ v.s. H_1: $\mu > 3.5$
    (c) H_0: $\bar{X} \geq 3.5$ v.s. H_1: $\bar{X} < 3.5$
    (d) H_0: $\bar{X} \leq 3.5$ v.s. H_1: $\bar{X} > 3.5$

23. (continued) The new method is applied to a random sample of 64 cell phones, and the mean assembling time is 3.2 minutes. Set the significance level $\alpha = 0.01$. Determine the decision rule.
    (a) reject H_0 if the observed test statistic $|Z_{\text{observed}}| > z_{0.005}$
    (b) reject H_0 if the observed test statistic $Z_{\text{observed}} > z_{0.01}$
    (c) reject H_0 if the observed test statistic $Z_{\text{observed}} < -z_{0.01}$
    (d) none of the above

24. (continued) Determine the p-value.
    (a) $P(Z \geq -2)$
    (b) $P(Z \leq -2)$
    (c) $P(Z \geq 2)$
    (d) none of the above

25. (continued) Suppose that the true mean is 3.2 minutes. Determine the type II error.
    (a) $P(Z \leq -2.326)$
    (b) $P(Z \leq -2)$
    (c) $P(Z \geq -0.326)$
    (d) none of the above

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26. The total units of privately owned housing in Twin Town in 2017-2022 are 1750, 1742, 1805, 1620, 1488, 1376. Use 3-period moving average to forecast the value in year 2023.
    (a) 1376
    (b) 1494.667
    (c) 1637.667
    (d) none of the above
27. (continued) Use exponential smoothing with smoothing parameter $\alpha = 0.8$ to forecast the value in year 2019.
    (a) 1792.7
    (b) 1743.6
    (c) 1654.5
    (d) none of the above
28. A real estate manager wants to study the relationship between the size of home a client will purchase and the family income. Let y be the size of home (in square meters) and x be the family income (in thousands). The regression model is $y = \beta_0 + \beta_1 x +$ error. Based on data $\{(x_1, y_1), ..., (x_{25}, y_{25})\}$, the correlation coefficient between the two variables is found to be 0.76. Obtain the proportion of the variation in home size that can be explained by family income.
    (a) about 76%
    (b) about 57.76%
    (c) about 24%
    (d) none of the above
29. (continued) Let ρ denote the population correlation coefficient. At the significance level α, consider H_0: $\rho \leq 0$ v.s. H_1: $\rho > 0$. Obtain the test statistic and the decision rule.
    (a) $t = 5.6$, reject H_0 if $t > t_{\alpha,23}$
    (b) $t = 3.7$, reject H_0 if $t > t_{\alpha,24}$
    (c) $t = 1.17$, reject H_0 if $t > t_{\alpha,25}$
    (d) none of the above
30. Consider a multiple regression model $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e$, where $e \sim N(0, \sigma^2)$. From $\{(y_i, x_{i1}, x_{i2}, x_{i3}), i = 1, ..., 10\}$, the total sum of squares is 49611 and the sum of squares due to regression is 40329. Determine the F value.
    (a) 8.69
    (b) 4.35
    (c) 2.58
    (d) none of the above
31. (continued) What hypothesis testing problem is the F statistic for ?
    (a) H_0: $\beta_1 = 0$ v.s. H_1: $\beta_1 \neq 0$
    (b) H_0: $\beta_i = 0$ for $i = 1, 2, 3$ v.s. H_1: at least one of the β_i is not zero
    (c) H_0: $\beta_i = 0$ for $i = 0, 1, 2, 3$ v.s. H_1: at least one of the β_i is not zero
    (d) none of the above
32. (continued) Obtain an estimate of σ.
    (a) 8.69
    (b) 18.92
    (c) 39.33
    (d) none of the above
33. (continued) At the significance level α, determine the critical value associated with the F value.
    (a) $F_{\alpha/2,3,6}$
    (b) $F_{\alpha,3,6}$
    (c) $F_{\alpha/2,4,6}$
    (d) $F_{\alpha,4,6}$
34. (continued) Obtain the coefficient of determination.
    (a) 81.3%
    (b) 39.3%
    (c) 19.7%
    (d) none of the above

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考試科目	統計學	系所別	企業管理研究所(MBA學位學程)/甲組	考試時間	2月 3日(五) 第四節

35. A manager surveys the quality of service offered by junior staff. A random sample of junior staff in two chain stores, A and B, are selected. The results are summarized in the following table.

	Poor	Fair	Good	Excellent
A	5	20	50	45
B	0	10	25	25

The manager is to test whether service and stores are independent at $\alpha = 0.05$. Find the critical value and test statistic.

(a) critical value $= \chi^2_{4,0.05}$; test statistic is 1.76

(b) critical value $= \chi^2_{4,0.025}$; test statistic is 1.76

(c) critical value $= \chi^2_{3,0.05}$; test statistic is 2.68

(d) critical value $= \chi^2_{3,0.025}$; test statistic is 2.68

36. The manager would like to test whether employees' performances differ before and after a training course. A random sample of 8 employees were selected and their performance scores before and after the training course were recorded. A higher score means a better performance. Consider a 2-way ANOVA analysis in which the training is treated as the treatment variable and the employee is treated as the blocking variable. The sum of squares are: $SS_{\text{treatment}} = 56$, $SS_{\text{block}} = 152$, $SS_{\text{error}} = 84$. Let $\mu_d = \mu_{\text{after}} - \mu_{\text{before}}$, where μ_{before} and μ_{after} are the mean scores before and after the training. Let t denote the paired t-statistic. Which of the following is correct?

(a) H_0: $\mu_d = 0$ v.s. H_1: $\mu_d > 0$

(b) at significance level α, the rejection is $\{|t| > t_{\alpha/2,8}\}$

(c) the t statistic for paired t test is 2.16

(d) none of the above

37. A study was conducted to investigate whether the mean assembling times (in minutes) of cell phones by three machines are the same. To do ANOVA, which of the following assumptions is not required?

(a) The assembling times from each machine follow a normal distribution.

(b) The assembling times from each machine are independent.

(c) The variances of the three population distributions are the same.

(d) The sample size from each machine must be at least 5.

38. (continued) Let the three population means be μ_i, $i = 1, 2, 3$ and the three population variances be σ_i^2, $i = 1, 2, 3$. Let the three sample means be $\bar{X}_i$, $i = 1, 2, 3$ and the three sample variances be S_i^2, $i = 1, 2, 3$. Determine the hypotheses.

(a) H_0: $S_1 = S_2 = S_3$ v.s. H_1: S_i's are not all equal.

(b) H_0: $\bar{X}_1 = \bar{X}_2 = \bar{X}_3$ v.s. H_1: $\bar{X}_i$'s are not all equal.

(c) H_0: $\sigma_1 = \sigma_2 = \sigma_3$ v.s. H_1: σ_i's are not all equal.

(d) H_0: $\mu_1 = \mu_2 = \mu_3$ v.s. H_1: μ_i's are not all equal.

39. (continued) Suppose that the sample sizes from the three machines are $n_1 = 15$, $n_2 = 15$ and $n_3 = 12$, and that $SS_{\text{between}} = 32$ and $SS_{\text{within}} = 90$. Obtain the F statistic.

(a) 0.36

(b) 4.62

(c) 6.93

(d) none of the above

40. (continued) To obtain the p-value, which of the following is required.

(a) the computed F value

(b) the significance level

(c) the rejection region

(d) all of the above

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

考試科目	管理學	系所別	MBA/甲組、乙組	考試時間	2 月 3 日 (五) 第 4 節

(2 points each, 100 points in total) 選擇題請在答案卡上作答，否則不予計分。

1. According to Katz, _____ skills tend to be more important for first-line managers since they manage employees who produce the products or deliver services.
A) Conceptual B) Empirical C) Human D) Technical

2. Wasting manpower is an example of _____.
A) inefficacy B) ineffableness C) inefficiency D) ineffectiveness

3. Which is NOT one of the four major management functions performed by mangers?
A) controlling B) directing C) organizing D) planning

4. A CEO is performing one of Mintzberg's _____roles when he/she participates in the ribbon-cutting ceremony for the new factory.
A) decisional B) informational C) interpersonal D) organizing

5. Which of the following decision is an aspect of intuition?
A) Experience-based B) Quality-initiated C) Science-based D) Programmed

6. When a manager holds someone accountable for their division's performance, the manager believes in the ___ view of management.
A) omnipotent B) omnipresent C) systemic D) symbolic

7. An organization's financial, physical, human, and intangible assets are known as its _____.
A) capabilities B) core competencies C) resources D) strengths

8. Which of the following are the two dimensions of environmental uncertainty?
A) Degree of complexity and degree of impact B) Degree of change and degree of complexity
C) Degree of change and degree of volume D) Degree of impact and degree of timing

9. _____ is a process new employees learn about the way of doing things in the company.
A) Inculcation B) Enculturation C) Socialization D) Transculturation

10. Managers with a(n) _____ attitude are less likely to success in international assignments.
A) multicultural B) multiracial C) geocentric D) ethnocentric

11. Which of the following has the lowest level of internationalization?
A) Global sourcing B) Licensing C) Franchising D) Strategic alliances with foreign companies

12. Which is NOT an example of workplace diversity?
A) age B) sex C) physical disability D) job satisfaction

13. _____ means judging a person on the basis of one's perception of a social group to which he or she belongs
A) Bias B) Assimilation C) Stereotyping D) Prejudice

14. According to the _____ view of social responsibility, management's only social responsibility is to maximize profits.
A) class B) neoclassical C) sociocultural D) socioeconomic

15. In the _____ approach of going green, an organization works to meet the environmental demands of its employees, suppliers, or community
A) activist B) legal C) market D) stakeholder

16. Change _____ are people who act as catalysts and assume the responsibility for managing the change process.
A) agents B) champions C) generators D) masters

17. Most companies' plans can be classified as either _____ or _____.
A) strategic; financial B) operational; tactical C) social; economic D) strategic; operational

18. _____ is a process of setting mutually-agreed upon goals and using those goals to evaluate employee performance.
A) Management by exception B) Management by performance
C) Management by objectives D) Management by observation

19. A _____ describes the rationale of how a company is going to make money.
A) strategy B) mission statement C) core competency D) business model

考試科目	管理學	系所別	MBA/甲組、乙組	考試時間	2 月 3 日 (五) 第 4 節

20. You conduct a(n) _____ when you study trends involving new technology, competitors, and customers.
A) external analysis B) internal analysis C) economic analysis D) industry analysis

21. ____ refer to the major value-creating capabilities of the organization
A) Strengths B) Competitive advantages C) Core competencies D) Resources

22. The _____ analysis combines external and internal analyses.
A) competitor B) industry C) market D) SWOT

23. A business unit that has low market share but a high anticipated growth rate is a _____ in the BCG matrix.
A) cash cow B) dog C) question mark D) star

24. A _____ strategy focus on offering unique products that are widely valued by customers.
A) differentiation B) focus C) functional D) leadership

25. Which one of the following items is found in the financial data section of the business plan?
A) Economic analysis B) Pricing C) *Pro forma* cash flow analysis D) Sales tactics

26. A new business ventures usually go through which of the following three stages?
A) Start-up, rapid growth, decline B) Idea generation, business formation, maturity
C) Start-up, transition, scaling D) Idea generation, scaling, maturity

27. Poor communication across the different groups is a typical disadvantage of _____ departmentalization.
A) customer B) functional C) geographic D) process

28. You just started your company 2 years ago. You now have 1 sales representative and 3 production employees. Your company is most likely to have a _____ structure.
A) divisional B) functional C) matrix D) simple

29. A job _____ is the assessment that defines jobs and the behaviors necessary to perform them.
A) analysis B) description C) evaluation D) preview

30. _____ indicates the extent to which a test measures the same thing consistently.
A) Objectivity B) Reliability C) Validity D)Utility

31. The _____ method utilizes feedback from supervisors, employees, coworkers, and customers.
A) 360-degree appraisal B) assessment center C) critical incident D) graphic rating scale

32. ___ conflicts are most likely to be dysfunctional in teamwork.
A) Process B) Relationship C) Status D) Task

33. What are the three components of attitudes?
A) intentional, reactive, and adjustable B) emotional, creative, and environmental
C) cognitive, affective, and behavioral D) active, behavioral, and adjustable

34. Which one of the Big Five personality traits is a valid predictor of good job performance for most occupations?
A) agreeableness B) conscientiousness C) emotional stability D) extraversion

35. A supervisor who micromanages his/her employees tend to be a Theory ____ manager.
A) T B) X C) Y D) Z

36. According to the three-needs theory, the effective managers tend to be _____ in the need for _____
A) high; achievement B) high; affection C) low; power D) low; affiliation

37. Job ____refers to the vertical expansion of a job by adding planning and evaluating responsibilities.
A) scope B) rotation C) enrichment D) enlargement

38. Which of the following theory serves as the foundations for MBO and OKR?
A) goal setting B) needs hierarchy C) path-goal D) reinforcement

考試科目	管理學	系所別	MBA/甲組、乙組	考試時間	2月3日(五)第4節

39. An effective transactional leader would most likely to hold _____ power.
A) expert B) information C) legitimate D) reward

40. _____ is the process of monitoring, comparing, and correcting work performance.
A) Controlling B) Evaluating C) Measuring D) Verifying

41. The _____ approach to performance measurement evaluates organizational performance more than just the financial perspective.
A) balanced scorecard B) balance sheet C) income statement D) market value

42. A factory hires additional workers as soon as they received a big order. The factory is using _____ control.
A) backward B) concurrent C) feedback D) feedforward

43. _____ ratios measure how efficiently the firm is using its assets.
A) Activity B) Leverage C) Liquidity D) Profitability

44. According to Hofstede, the country cultures of ____ is most similar to Taiwan.
A) China B) Japan C) Singapore D) South Korea

45. Organizations grow by using strategies of _____.
A) concentration, integration, or diversification B) concentration, integration, or stabilization
C) integration, diversification, or differentiation D) integration, diversification, or functionalization

46. The typical order for the three-step change process is _____.
A) unfreezing, refreezing and changing B) changing, unfreezing and refreezing
C) unfreezing, changing and refreezing D) refreezing, changing and unfreezing

47. According to the JCM, which three job characteristics are critical to the meaningfulness of a job?
A) Autonomy, task identity, and task significance B) Skill variety, task identity, and task significance
C) Autonomy, feedback, and task significance D) Skill variety, autonomy, and feedback

48. Fiedler's contingency theory of leadership suggests that the best leadership style was a function of ____.
A) chain of command, relationships, and power
B) formal authority, production orientation, and consideration
C) leader-member relations, task structure, and position power
D) situation, personality of leader, and readiness of employees

49. Individual behavior in organizations includes _____.
A) structure, culture, and team building B) strategies, norms, and roles
C) policies, practice and procedure D) attitudes, learning, and motivation

50. The three main types of corporate strategies are
A) Growth, cost leadership, and differentiation B) Growth, stability, and renewal
C) Stability, differentiation, and focus D) Stability, focus, and turnaround

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

考試科目	微積分	系所別	企業管理研究所乙組	考試時間	2 月 3 日(五) 第 四 節

※Show all calculations and display answers clearly. No credit will be given for unjustified answers.

1. (10 points) Evaluate the limit: $\lim_{x\to 0+}[\cos(3x)]^{\frac{1}{x^2}}$

2. (10 points) Evaluate: $\frac{d}{dx}\left[(2-3x^4)^2\ln(x^2+1)\right]$

3. Evaluate the integrals:

   (a) (10 points) $\int \frac{2x-3}{x^3+x}dx$

   (b) (10 points) $\int x^3\sqrt{x^2-5}dx$

   (c) (10 points) $\int \tan^{-1}(\frac{1}{x})dx$

4. For each of the following series, determine whether it is absolutely convergent, conditionally convergent, or divergent; state which test you are using to determine convergence/divergence, and show all work.

   (a) (10 points) $\sum_{k=0}^{\infty}\frac{3^{k+1}}{(k+1)^2}e^k$

   (b) (10 points) $\sum_{k=0}^{\infty}\frac{\sin(k)}{(k+1)^2}$

5. (10 points) A company sells shoes to dealers at \$20 per pair if fewer than 50 pairs are ordered. If 50 or more pairs are ordered (up to 600), the price per pair is reduced 2 cents times the number ordered. What size order produces maximum revenue for the company?

6. (10 points) For a certain product, the demand function is $D(x) = 1000 - 25x$ and the supply function is $S(x) = 100 + x^2$, where x is the quantity of the products. Find the market equilibrium price and compute the consumer surplus.

7. (10 points) Ian has \$20 to spend on beer (x) and pizza slices (y). A beer costs \$2 while a pizza slice costs \$1. His utility is $U(x,y) = x^{\frac{1}{2}}y^{\frac{1}{2}}$. How many pizza slices and beers should Ian choose to maximize his utility? What is the change in the value of his optimized utility if he spends \$21 on buying beers and pizza slices?

備註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。