

國立中山大學99學年度碩士班招生考試試題

科目：經濟學甲【企管系甲班碩士班甲組】

第一部份：單選題，共72分，答對每題3分，答錯不倒扣。

1. If your nominal wage rises faster than the price level, then we can say your real wage has _____ and the purchasing power of your income has _____.
A) risen; risen B) risen; fallen C) fallen; risen D) fallen; fallen
2. If inflation in the U.S. is higher than inflation in other countries, what will be the effect on net exports for the U.S.?
A) net exports will rise as U.S. exports increase
B) net exports will decrease as U.S. imports decrease
C) net exports will decrease as U.S. exports decrease
D) net exports will rise as U.S. imports decrease
3. If planned aggregate expenditures are below potential GDP, and planned aggregate expenditures equal GDP, then
A) the economy is at full employment.
B) actual inventory investment will be less than planned inventory investment.
C) the economy is in a recession.
D) actual inventory investment will be greater than planned inventory investment.
4. Suppose the economy is at a short run equilibrium GDP that lies above potential GDP. Which of the following will occur because of the automatic mechanism adjusting the economy back to potential GDP?
A) Short-run aggregate supply will shift to the left.
B) Prices will decline.
C) Output will increase.
D) Unemployment will decline.
5. After an unexpected increase in the price of oil, the long-run adjustment _____ the price level and _____ the unemployment rate as they return to their original levels.
A) decreases; increases B) increases; increases
C) increases; decreases D) decreases; decreases
6. If households in the economy decide to take money out of checking account deposits and hold it as currency, this will initially
A) not change M1 and increase M2. B) decrease M1 and not change M2.
C) decrease M1 and decrease M2. D) not change M1 and not change M2.
7. If the U.S. dollar increases in value relative to other currencies, how does this affect the aggregate demand curve?
A) This will move the economy down along a stationary aggregate demand curve.
B) This will shift the aggregate demand curve to the left.
C) This will shift the aggregate demand curve to the right.
D) This will move the economy up along a stationary aggregate demand curve.
8. Suppose the Fed decreases the money supply. In response households and firms will _____ short term assets and this will drive _____ interest rates.
A) sell; up B) sell; down C) buy; up D) buy; down

9. An increase in government spending, as the price level rises,
- A) decreases the interest rate, and consumption and investment spending decline.
 - B) increases the interest rate, and consumption and investment spending decline.
 - C) decreases the interest rate, and consumption and investment spending rise.
 - D) increases the interest rate, and consumption and investment spending rise.
10. Crowding out, following an increase in government spending, results from (the exchange rate is the foreign exchange price of the domestic currency).
- A) lower interest rates and a lower exchange rate.
 - B) lower interest rates and a higher exchange rate.
 - C) higher interest rates and a higher exchange rate
 - D) higher interest rates and a lower exchange rate
11. Consider a tax cut which affects not only consumer disposable income, but also after tax earnings from labor supplied to labor markets and from financial assets acquired through saving. In the long run we would expect this tax cut to:
- A) increase the level of real GDP.
 - B) increase the price level.
 - C) increase both the price level and the level of real GDP.
 - D) decrease both the price level and increase real GDP.
12. The price level in the economy between 2005 and 2006 rose from 100 to 105. Between 2006 and 2007, the price level rose from 105 to 110.25. How does the short-run Phillips curve predict the unemployment rate will change as a result?
- A) The unemployment rate will decrease since inflation decreased.
 - B) The unemployment rate will not change since there is no change in the rate of inflation.
 - C) The unemployment rate will decrease since inflation increased.
 - D) The unemployment rate will increase since inflation increased.
13. If a country has a fixed exchange rate,
- A) central banks have more control over real GDP in the economy.
 - B) central banks must buy and sell their holdings of currencies to maintain a given exchange rate.
 - C) the equilibrium exchange rate in that market does not respond to changes in supply and demand for currency.
 - D) the equilibrium exchange rate is not allowed to fluctuate in response to changes in the supply and demand for currency.
14. If the government finances an increase in government purchases with an increase in taxes, which of the following would you not expect to see?
- A) an increase in the exchange rate
 - B) a decrease in the interest rate
 - C) a decrease in net exports
 - D) an increase in aggregate demand
15. Ron's Desk Company expects to sell \$10,000,000 worth of desks and to produce \$10,500,000 worth of desks in the coming year. The company purchases \$100,000 of new equipment during the year. Sales for the year turn out to be \$10,000,000. Actual investment by Ron's Desk Company equals _____ and planned investment equals _____.
- A) \$0; \$100,000
 - B) \$0; \$600,000
 - C) \$100,000; \$600,000
 - D) \$600,000; \$600,000

16. When the Federal Reserve reduces its inflation target, it sets a _____ real interest rate at any rate of inflation, which will _____ consumption and investment spending at every level of output.
 A) higher; increase B) higher; decrease C) higher; not change D) lower; increase
17. The price of good A falls and the demand for good B decreases. Goods A and B are
 A) Cannot be determined
 B) Substitutes
 C) Complements
 D) Normal goods
18. Suppose $MRS_{x,y} = 3$ for all levels of x and y . Goods x and y are
 A) perfect substitutes.
 B) perfect complements.
 C) normal goods.
 D) inferior goods.
19. Which of the following utility functions is an example of preferences for perfect complements?
 A) $U(x, y) = xy$
 B) $U(x, y) = \min\{2x, y\}$
 C) $U(x, y) = 3x + 5y$
 D) $U(x, y) = 2x^2 + 4y$
20. Suppose every automobile requires exactly one engine (E) and four tires (T). The production function for this process is
 A) $Q = E + 4T$
 B) $Q = 4E + T$
 C) $Q = \min(E, 0.25T)$
 D) $Q = \min(4E, T)$
21. Consider the Cobb-Douglas production function $Q = 25K\sqrt{L}$. The average cost function associated with this production technology will exhibit
 A) economies of scale.
 B) diseconomies of scale.
 C) neither economies nor diseconomies of scale.
 D) indeterminate scale economies since the level of output and the prices of the inputs are unknown.
22. Suppose that a smoker and a non-smoker are seated next to each other in a restaurant. This restaurant does not offer a non-smoking section. The smoker is indifferent between 1) smoking and 2) not smoking and consuming a \$6 dessert. The non-smoker values being able to eat in a smoke-free environment at \$10. According to Coase's Theorem, and assuming no bargaining costs, what will happen?
 A) The smoker will continue to smoke because that is his right.
 B) The smoker will stop smoking, just to be a nice guy.
 C) The non-smoker will offer to pay the smoker between \$6 and \$10 to stop smoking, but the smoker will refuse because he has the right to smoke.
 D) The non-smoker will offer to pay the smoker between \$6 and \$10 to stop smoking, and the smoker will accept the money and refrain from smoking.

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23. Suppose that a consumer's demand curve for chocolate can be expressed as $P = 10 - 2Q^d$, and suppose that the market is initially in equilibrium at a price of \$4. Now suppose that the price rises to \$6. What is the change in consumer surplus?
- A) An increase of 5.
 B) A decrease of 2.
 C) A decrease of 4.
 D) A decrease of 5.
24. The production function $Q = KL$ exhibits
- A) increasing returns to scale.
 B) constant returns to scale.
 C) decreasing returns to scale.
 D) undefined returns to scale.

第二部份：計算題，只須列答案，不必列計算過程。答對每題4分，答錯不倒扣，共28分。

1. Suppose in a market with $Q^d = 200 - 10P$ and $Q^s = 10P$, the government imposes a price floor of \$15. If the government is required to purchase any surplus at the price floor, how much will the government have to pay to purchase the surplus in this market?
2. The market for sweet potatoes consists of 1,000 identical firms. The market demand curve is given by $Q = 402 - P$. Each firm has a short-run total cost curve of $STC = 0.5 + 100Q^2$. How much output will each individual firm supply?
3. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. How much of this \$3 tax is paid by consumers?
4. Suppose a monopolist faces demand $P = 300 - 6Q$ and has marginal cost $MC = 120 + 6Q$. What price should this monopolist charge to maximize profit?
5. Suppose that Bill, George, and Al constitute the entire market for consumers of national defense. Each man has an identical demand curve for national defense, which can be expressed as $P = 50 - Q$. Suppose that the marginal cost for national defense can be expressed as $MC = \$30$. What is the optimal quantity of national defense?
6. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 100 - Q^d$. The initial supply curve is $P = 3Q^s$. Suppose that the government imposes a \$4 subsidy on this market. What is the dead-weight loss due to the subsidy?
7. Charlie consumes two goods, professional baseball games (B) and mystery novels (N). The price of baseball games is P_B ; the price of mystery novels is P_N . Charlie has an income of I to spend on these two goods. Charlie's utility function can be represented as $U = B^2N$. What is the equation for the demand curve for baseball games?

一：單選題 (每題3分，共20題，佔總分60%)

Please select one most appropriate answer in the following questions.

1. When conflict is resolved by compromise between the parties in conflict, this is known as:
 - A) functional conflict resolution
 - B) top-down change
 - C) bottom-up change
 - D) distributive negotiation
 - E) organizational politics

2. Which plan of the organization contains top management's decisions about the organization's mission, goals, strategy, and structure?
 - A) corporate-level plan
 - B) divisional-level plan
 - C) functional-level plan
 - D) business-level plan
 - E) departmental-level plan

3. A church targeting different demographic groups to increase attendance is an example of _____.
 - A) for-profit marketing
 - B) not-for-profit marketing
 - C) mindless marketing
 - D) ethics in marketing
 - E) societal marketing

4. The component of an HRM system that focuses on attempting to attract and to hire employees who have the abilities and experiences to help the organization to achieve its goals is known as:
 - A) training.
 - B) development.
 - C) recruitment and selection.
 - D) performance appraisal.
 - E) feedback.

5. An organization's culture is most like its:
 - A) structure
 - B) strategy
 - C) reward systems
 - D) personality
 - E) vision

6. According to path-goal theory, when leading creative workers, a manager should be:
 - A) supportive and critical
 - B) supportive and uncritical
 - C) hands-off and critical
 - D) hands-off and uncritical
 - E) directive

7. A manager's characteristic way of speaking in terms of his tone of voice, use of questions, and choice of words is an example of this manager's:
- A) noise.
 - B) linguistic style.
 - C) nonverbal communication.
 - D) information richness.
 - E) information distortion.
8. In XYZ Company, each product line is managed within a division. In each of these divisions, the division manager is responsible for creating the business-level strategy for the product line. What type of structure is the organization using?
- A) geographic structure
 - B) market structure
 - C) product structure
 - D) functional structure
 - E) none of the above
9. The managers of an organization feel that the advertising message of one of their major competitors is false and misleading. This is an example of:
- A) intragroup conflict.
 - B) intrapersonal conflict.
 - C) intergroup conflict.
 - D) interorganizational conflict.
 - E) all of the above.
10. A sales manager for a Ford Motor Co. dealer evaluates each one of his sales staff monthly on the basis of the number of new cars sold during the past month. This is an example of:
- A) a subjective appraisal.
 - B) situational testing.
 - C) personality testing.
 - D) ability testing.
 - E) an objective appraisal.
11. The sharing of information between two or more people within the organization in order to reach a common understanding is known as:
- A) noise.
 - B) encoding.
 - C) communication.
 - D) filtering.
 - E) jargon.
12. In attempting to promote innovation in a work group, the supervisor of this work group should do all of the following EXCEPT:
- A) provide guidance to the group.
 - B) provide coaching to the group.
 - C) provide detailed procedures to the group.
 - D) provide the resources the group needs.
 - E) provide assistance to the group.

13. Two managers both claim authority for same tasks. This is known as:
- A) task interdependence.
 - B) incompatible goals.
 - C) scarce resources.
 - D) overlapping authority.
 - E) incompatible time horizons.
14. Which of the following is an example of a tangible reward that a manager can give to a subordinate?
- A) an attractive job assignment
 - B) a cash bonus
 - C) a pay raise
 - D) stock options
 - E) all of the above
15. A job applicant calls a professor who taught him in college and asks him to write a letter to her prospective employer commenting on her classroom performance. This is an example of:
- A) reference-checking
 - B) recruiting
 - C) training
 - D) development
 - E) none of the above
16. In which step of SWOT analysis would "slower market growth" be most likely to arise?
- A) S
 - B) W
 - C) O
 - D) T
 - E) either S or W
17. A _____ defines a business in terms of satisfying basic customer needs.
- A) market-oriented mission statement
 - B) product-oriented mission statement
 - C) technology-oriented mission statement
 - D) environment-oriented mission statement
 - E) strategic plan
18. According to management guru Peter Drucker, "The aim of marketing is to _____."
- A) create customer value
 - B) identify customer demands
 - C) make selling unnecessary
 - D) set realistic customer expectations
 - E) sell products
19. The first step in strategic planning is to _____.
- A) set objectives and goals
 - B) develop the business portfolio
 - C) define the company mission
 - D) plan marketing strategies
 - E) identify a problem

20. _____ can be a company division, a product line within a division, or sometimes a single product or brand.
- A) a market
 - B) the BCG
 - C) an SBU
 - D) a PLC
 - E) a value delivery network

二：簡答題 (每題10分，共2題，佔總分20%)

請解釋以下專有名詞並闡述其在管理上的應用，每題字數不得超過 250 字，違者扣分。

1. Societal marketing concept
2. Customer equity

三：申論題 (佔總分20%)

Fritz Heider 所提出的歸因理論(attribution theory)被廣泛應用在管理上。(1)何謂歸因理論？請詳細說明之。(2)請舉一實例說明歸因理論在管理上的應用。

第一部份，單選題，共72分，答對每題3分，答錯不倒扣。

1. Home Depot sells new and used doors to contractors who build new homes. Home Depot also sells new and used doors to homeowners. Which of the following would be counted in GDP?
 - A) The sale of a new door to homeowner.
 - B) The sale of a used door to TapKon construction for installation into a new home.
 - C) The sale of a new door to TapKon construction for installation into a new home.
 - D) The sale of a used door to a homeowner.
2. If your nominal wage rises faster than the price level then we can say your real wage has _____ and the purchasing power of your income has _____.
 - A) fallen; risen
 - B) risen; fallen
 - C) risen; risen
 - D) fallen; fallen
3. If inflation in the U.S. is higher than inflation in other countries, what will be the effect on net exports for the U.S.?
 - A) net exports will rise as U.S. exports increase
 - B) net exports will decrease as U.S. imports decrease
 - C) net exports will decrease as U.S. exports decrease
 - D) net exports will rise as U.S. imports decrease
4. If planned aggregate expenditures are below potential GDP, and planned aggregate expenditures equal GDP then
 - A) the economy is in a recession.
 - B) actual inventory investment will be less than planned inventory investment.
 - C) the economy is at full employment.
 - D) actual inventory investment will be greater than planned inventory investment.
5. If the economy is currently in equilibrium at a level of GDP that is below potential GDP, which of the following would move the economy back to potential GDP?
 - A) an increase in interest rates
 - B) an increase in the value of the dollar relative to other currencies
 - C) a decrease in business confidence
 - D) an increase in wealth
6. If households in the economy decide to take money out of checking account deposits and hold it as currency this will initially
 - A) not change M1 and increase M2.
 - B) decrease M1 and not change M2.
 - C) decrease M1 and decrease M2.
 - D) not change M1 and not change M2.
7. If households in the economy decide to take money out of checking account deposits and put this money into savings accounts this will initially
 - A) increase M1 and decrease M2.
 - B) decrease M1 and decrease M2.
 - C) decrease M1 and increase M2.
 - D) decrease M1 and not change M2.
8. When you open a checking account at Bank of America, Bank of America
 - A) has more reserves, but excess reserves remain unchanged
 - B) has more deposits, but excess reserves remain unchanged.
 - C) has more deposits and less in excess reserves.
 - D) has more reserves and more excess reserves.

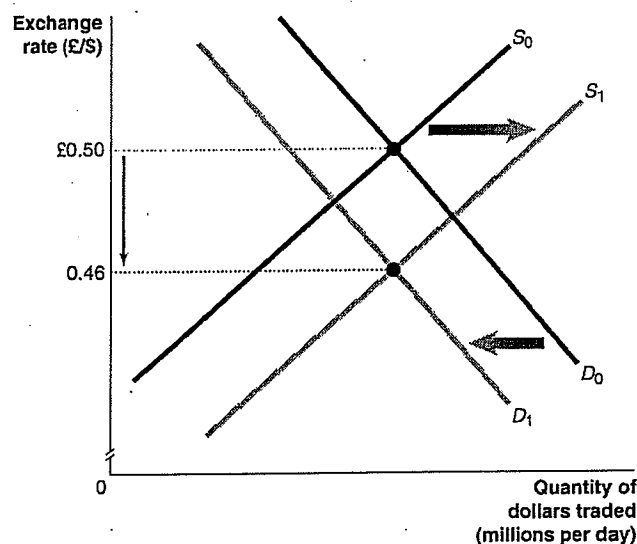
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9. Suppose the Fed decreases the money supply. In response households and firms will _____ short term assets and this will drive _____ interest rates.
A) sell; up B) sell; down C) buy; up D) buy; down
10. Crowding out, following an increase in government spending, results from (the exchange rate is the foreign exchange price of the domestic currency).
A) lower interest rates and a lower exchange rate.
B) lower interest rates and a higher exchange rate.
C) higher interest rates and a higher exchange rate
D) higher interest rates and a lower exchange rate
11. Consider the hypothetical information in the table below for potential real GDP, real GDP and the price level in 2011 and in 2012 if the Congress and the president do not use fiscal policy. If the Congress and the president want to keep real GDP at its potential level in 2012, it should
A) conduct expansionary fiscal policy. B) decrease government purchases.
C) decrease the discount rate. D) buy Treasury securities.

Year	Potential Real GDP	Real GDP	Price Level
2011	\$14 trillion	\$14 trillion	150
2012	14.5 trillion	14.8 trillion	154

12. Consider a tax cut which affects not only consumer disposable income, but also after tax earnings from labor supplied to labor markets and from financial assets acquired through saving. In the long run we would expect this tax cut to:
A) increase the level of real GDP.
B) increase the price level.
C) increase both the price level and the level of real GDP.
D) decrease both the price level and increase real GDP.
13. Which of the events below cause the shifts in supply and demand shown in the market for dollars against the British pound shown in the graph below?
A) interest rates rise in England B) real income rises in the United States
C) interest rates rise in the United States D) real income falls in England



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14. Following a tax cut by government, domestic investment will _____ and net exports will _____.
- A) decrease; increase B) increase; decrease
C) increase; increase D) decrease; decrease
15. In Macroland there is \$2,000,000 in currency. The public holds half of the currency and banks hold the rest as reserves. If banks' desired reserve/deposit ratio is 5%, deposits in Macroland equal _____ and the money supply equals _____.
- A) 2,000,000; 2,100,000 B) 20,000,000; 21,000,000
C) 20,000,000; 22,000,000 D) 40,000,000; 40,000,000
16. Ron's Desk Company expects to sell \$10,000,000 worth of desks and to produce \$10,500,000 worth of desks in the coming year. The company purchases \$100,000 of new equipment during the year. Sales for the year turn out to be \$10,000,000. Actual investment by Ron's Desk Company equals _____ and planned investment equals _____.
- A) \$0; \$100,000 B) \$0; \$600,000 C) \$100,000; \$600,000 D) \$600,000; \$600,000
17. Of the following choices, which good should have the most elastic price elasticity of demand?
- A) Candy bars.
B) Snickers candy bars.
C) Chocolate candy bars.
D) Candy.
18. Which of the following utility functions is an example of preferences for perfect substitutes?
- A) $U(x, y) = xy$
B) $U(x, y) = \min\{2x, y\}$
C) $U(x, y) = 3x + 5y$
D) $U(x, y) = 2x^2 + 4y$
19. Suppose at the firm's current long-run combination of capital and labor that $MP_K = 15$, $MP_L = 10$, $r = 8$, and $w = 3$. The firm
- A) is currently minimizing total cost in the long run.
B) could lower cost by increasing the usage of capital and decreasing the usage of labor.
C) could lower cost by increasing the usage of labor and decreasing the usage of capital.
D) cannot lower cost without also lowering the level of output.
20. An environmental economic consulting firm is hired to measure the production schedule for a coal-burning electric generating plant in such a way as to incorporate the negative externalities associated with the pollution from the plant. The marginal social cost of this plant's production can be expressed as $MSC = 3Q$. Prior to the consulting firm's report, the consultants asked the plant's manager for data to generate the firm's supply schedule. The consultants calculate that the marginal private cost of the plant's production can be expressed as $MPC = Q$. The firm's demand curve can be expressed as $P = 60 - 2Q$. If the consultants have accurately measured the impact of the pollution externality, the firm is _____ by _____ dollars.
- A) under-pricing; 8
B) over-pricing; 8
C) under-pricing; 16
D) over-pricing; 16

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21. Suppose that a consumer's demand curve for chocolate can be expressed as $P = 10 - 2Q^d$, and suppose that the market is initially in equilibrium at a price of \$4. Now suppose that the price rises to \$6. What is the change in consumer surplus?
- A) An increase of 5.
 B) A decrease of 2.
 C) A decrease of 4.
 D) A decrease of 5.
22. Suppose that firms A and B are Cournot duopolists in the salt industry. The market demand curve can be specified as $P = 200 - Q_A - Q_B$. The marginal cost to each firm is \$40. What is firm B's profit-maximizing quantity when firm A produces an arbitrary output Q_A ?
- A) $Q_B = 160 - Q_A$.
 B) $Q_B = 160 - 2Q_A$.
 C) $Q_B = 80 - Q_A$.
 D) $Q_B = 80 - \frac{1}{2}Q_A$.
23. Suppose every automobile requires exactly one engine (E) and four tires (T). The production function for this process is
- A) $Q = E + 4T$
 B) $Q = 4E + T$
 C) $Q = \min(E, 0.25T)$
 D) $Q = \min(4E, T)$
24. Suppose the price of A is \$4, the price of B is \$2, and that the consumer is currently spending all available income. At the consumer's current consumption basket the marginal utility of A is 5 and the marginal utility of B is 3.
- A) The consumer is currently maximizing utility.
 B) The consumer could increase utility by consuming more of good A and less of good B.
 C) The consumer could increase utility by consuming more of good B and less of good A.
 D) Nothing can be said about the consumer's utility because we do not know the consumer's income or utility function.

第二部份：計算題，只須列答案，不必列計算過程。答對每題4分，答錯不倒扣，共28分。

1. Consider a market with $Q^d = 200 - 10P + I$ and $Q^s = 5P$. Suppose that initially income is $I = 25$, and that income then increases to $I = 55$. What is the increase in consumer surplus from this increase in income?
2. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is consumer surplus after the government imposes the tax?
3. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 90 - Q^d$. The initial supply curve is $P = 2Q^s$. Suppose that the government imposes a \$3 tax on this market. What is the change in consumer surplus due to the tax?
4. Suppose a monopolist faces demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist engages in first-degree price discrimination, what is the total output?

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5. Suppose that a particular plant emits a chemical that pollutes the ground water. Without considering the effects of the pollution, the firm has a marginal private cost curve of $MPC = 2Q + 30$. The firm faces a demand curve of $P = 60 - Q$. If the firm were to incorporate the costs of the pollution, the firm would have a marginal social cost curve of $MSC = 4Q + 30$. What is socially optimal level of output?
6. The market for sweet potatoes consists of 1,000 identical firms. The market demand curve is given by $Q^d = 402 - P$. Each firm has a short-run total cost curve of $STC = 0.5 + 100Q^2$. What is the market-clearing price?
7. Suppose in a Cournot duopoly that two firms, Firm 1 and Firm 2, face market demand $P = 50 - Q$ and both have marginal cost, $MC = \$20$. What is the equilibrium price in this market?

一：單選題 (每題3分，共20題，佔總分60%)

Please select one most appropriate answer in the following questions.

1. Which plan of the organization contains top management's decisions about the organization's mission, goals, strategy, and structure?
 - A) corporate-level plan
 - B) divisional-level plan
 - C) functional-level plan
 - D) business-level plan
 - E) departmental-level plan

2. A job applicant calls a professor who taught him in college and asks him to write a letter to her prospective employer commenting on her classroom performance. This is an example of:
 - A) reference-checking
 - B) recruiting
 - C) training
 - D) development
 - E) none of the above

3. According to path-goal theory, when leading creative workers, a manager should be:
 - A) supportive and critical
 - B) supportive and uncritical
 - C) hands-off and critical
 - D) hands-off and uncritical
 - E) directive

4. _____ can be a company division, a product line within a division, or sometimes a single **product or brand**.
 - A) a market
 - B) the BCG
 - C) an SBU
 - D) a PLC
 - E) a value delivery network

5. An organization's culture is most like its:
 - A) structure
 - B) strategy
 - C) reward systems
 - D) personality
 - E) vision

6. A manager's characteristic way of speaking in terms of his tone of voice, use of questions, and choice of words is an example of this manager's:
 - A) noise.
 - B) linguistic style.
 - C) nonverbal communication.
 - D) information richness.
 - E) information distortion.

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- A) for-profit marketing
 - B) not-for-profit marketing
 - C) mindless marketing
 - D) ethics in marketing
 - E) societal marketing
8. In XYZ Company, each product line is managed within a division. In each of these divisions, the division manager is responsible for creating the business-level strategy for the product line. What type of structure is the organization using?
- A) geographic structure
 - B) market structure
 - C) product structure
 - D) functional structure
 - E) none of the above
9. The managers of an organization feel that the advertising message of one of their major competitors is false and misleading. This is an example of:
- A) intragroup conflict.
 - B) intrapersonal conflict.
 - C) intergroup conflict.
 - D) interorganizational conflict.
 - E) all of the above.
10. A sales manager for a Ford Motor Co. dealer evaluates each one of his sales staff monthly on the basis of the number of new cars sold during the past month. This is an example of:
- A) a subjective appraisal.
 - B) situational testing.
 - C) personality testing.
 - D) ability testing.
 - E) an objective appraisal.
11. The sharing of information between two or more people within the organization in order to reach a common understanding is known as:
- A) noise.
 - B) encoding.
 - C) communication.
 - D) filtering.
 - E) jargon.
12. In attempting to promote innovation in a work group, the supervisor of this work group should do all of the following EXCEPT:
- A) provide guidance to the group.
 - B) provide coaching to the group.
 - C) provide detailed procedures to the group.
 - D) provide the resources the group needs.
 - E) provide assistance to the group.

13. Two managers both claim authority for same tasks. This is known as:
- A) task interdependence.
 - B) incompatible goals.
 - C) scarce resources.
 - D) overlapping authority.
 - E) incompatible time horizons.
14. Which of the following is an example of a tangible reward that a manager can give to a subordinate?
- A) an attractive job assignment
 - B) a cash bonus
 - C) a pay raise
 - D) stock options
 - E) all of the above
15. A _____ defines a business in terms of satisfying basic customer needs.
- A) market-oriented mission statement
 - B) product-oriented mission statement
 - C) technology-oriented mission statement
 - D) environment-oriented mission statement
 - E) strategic plan
16. In which step of SWOT analysis would "slower market growth" be most likely to arise?
- A) S
 - B) W
 - C) O
 - D) T
 - E) either S or W
17. When conflict is resolved by compromise between the parties in conflict, this is known as:
- A) functional conflict resolution
 - B) top-down change
 - C) bottom-up change
 - D) distributive negotiation
 - E) organizational politics
18. According to management guru Peter Drucker, "The aim of marketing is to _____."
- A) create customer value
 - B) identify customer demands
 - C) make selling unnecessary
 - D) set realistic customer expectations
 - E) sell products
19. The first step in strategic planning is to _____.
- A) set objectives and goals
 - B) develop the business portfolio
 - C) define the company mission
 - D) plan marketing strategies
 - E) identify a problem

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20. The component of an HRM system that focuses on attempting to attract and to hire employees who have the abilities and experiences to help the organization to achieve its goals is known as:

- A) training.
- B) development.
- C) recruitment and selection.
- D) performance appraisal.
- E) feedback.

二：簡答題 (每題10分，共2題，佔總分20%)

請解釋以下專有名詞並闡述其在管理上的應用，每題字數不得超過 250 字，違者扣分。

1. Marketing concept

2. Reference group

三：申論題 (佔總分20%)

Fritz Heider 所提出的歸因理論(attribution theory)被廣泛應用在管理上。(1)何謂歸因理論？請詳細說明之。(2)請舉一實例說明歸因理論在管理上的應用。

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第一部份：單選題，共72分，答對每題3分，答錯不倒扣。

1. Suppose that a very simple economy produces three goods: movies, burgers, and bikes. Suppose the quantities produced and their corresponding prices for 2002 and 2007 are shown in the following table.

<i>Product</i>	<i>2002</i>		<i>2007</i>	
	<i>Quantity</i>	<i>Price</i>	<i>Quantity</i>	<i>Price</i>
Movies	20	\$6	30	\$7
Burgers	100	\$2	90	\$2.50
Bikes	3	\$1,000	6	\$1,100

What is real GDP in 2007, using 2002 as the base year?

- A) \$6,360 B) \$3,690 C) \$7,035 D) \$3,320
2. The equilibrium wage in a local labor market is \$6 per hour. If a minimum wage of \$8 per hour is imposed, which of the following will occur?
- A) There will be an increase in unemployment
 B) There will be a decrease in the quantity of labor supplied by households.
 C) There will be an increase in the quantity of labor demanded by firms.
 D) All of the above will occur.
3. If inflation in the U.S. is higher than inflation in other countries, what will be the effect on net exports for the U.S.?
- A) net exports will rise as U.S. exports increase
 B) net exports will decrease as U.S. imports decrease
 C) net exports will decrease as U.S. exports decrease
 D) net exports will rise as U.S. imports decrease
4. Suppose the economy is at a short run equilibrium GDP that lies above potential GDP. Which of the following will occur because of the automatic mechanism adjusting the economy back to potential GDP?
- A) Short-run aggregate supply will shift to the left.
 B) Prices will decline.
 C) Output will increase.
 D) Unemployment will decline.
5. After an unexpected increase in the price of oil, the long-run adjustment _____ the price level and _____ the unemployment rate as they return to their original levels.
- A) decreases; increases B) increases; increases
 C) increases; decreases D) decreases; decreases
6. If households in the economy decide to take money out of checking account deposits and hold it as currency this will initially
- A) not change M1 and increase M2.
 B) decrease M1 and not change M2.
 C) decrease M1 and decrease M2.
 D) not change M1 and not change M2.

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7. When you open a checking account at Bank of America, Bank of America
- A) has more reserves, but excess reserves remain unchanged
 - B) has more deposits, but excess reserves remain unchanged.
 - C) has more deposits and less in excess reserves.
 - D) has more reserves and more excess reserves.
8. Suppose the Fed decreases the money supply. In response households and firms will _____ short term assets and this will drive _____ interest rates.
- A) sell; up
 - B) sell; down
 - C) buy; up
 - D) buy; down
9. An increase in government spending, as the price level rises,
- A) decreases the interest rate and consumption and investment spending decline.
 - B) increases the interest rate and consumption and investment spending decline.
 - C) decreases the interest rate and consumption and investment spending rise.
 - D) increases the interest rate and consumption and investment spending rise.
10. Consider a tax cut which affects not only consumer disposable income, but also after tax earnings from labor supplied to labor markets and from financial assets acquired through saving. In the long run we would expect this tax cut to:
- A) increase the level of real GDP.
 - B) increase the price level.
 - C) increase both the price level and the level of real GDP.
 - D) decrease both the price level and increase real GDP.
11. The price level in the economy between 2005 and 2006 rose from 100 to 105. Between 2006 and 2007, the price level rose from 105 to 110.25. How does the short-run Phillips curve predict the unemployment rate will change as a result?
- A) The unemployment rate will decrease since inflation decreased.
 - B) The unemployment rate will not change since there is no change in the rate of inflation.
 - C) The unemployment rate will decrease since inflation increased.
 - D) The unemployment rate will increase since inflation increased.
12. If the United States is a "net borrower" from abroad,
- A) domestic saving is less than domestic investment.
 - B) net foreign investment must be positive.
 - C) net capital flows must be negative.
 - D) the United States must be exporting more than it is importing.
13. Following a tax cut by government, domestic investment will _____ and net exports will _____.
- A) decrease; increase
 - B) increase; decrease
 - C) increase; increase
 - D) decrease; decrease
14. Ron's Desk Company expects to sell \$10,000,000 worth of desks and to produce \$10,500,000 worth of desks in the coming year. The company purchases \$100,000 of new equipment during the year. Sales for the year turn out to be \$10,000,000. Actual investment by Ron's Desk Company equals _____ and planned investment equals _____.
- A) \$0; \$100,000
 - B) \$0; \$600,000
 - C) \$100,000; \$600,000
 - D) \$600,000; \$600,000

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15. If the government finances an increase in government purchases with an increase in taxes, which of the following would you not expect to see?
- A) an increase in the exchange rate B) a decrease in the interest rate
C) a decrease in net exports D) an increase in aggregate demand
16. Holding all else constant, an increase in U.S. real GDP will ____ the supply of dollars in the foreign exchange market and ____ the equilibrium Mexican peso/U.S. dollar exchange rate.
- A) increase; increase B) increase; decrease C) decrease; increase D) decrease; decrease
17. Suppose $MRS_{x,y} = 3$.
- A) The consumer is willing to substitute 3 units of x for 1 unit of y to leave utility unchanged.
B) The consumer is willing to substitute 3 units of y for 1 unit of x to leave utility unchanged.
C) Regardless of prices, the consumer will consume only y .
D) Regardless of prices, the consumer will consume only x .
18. Suppose the price of A is \$4, the price of B is \$2, and that the consumer is currently spending all available income. At the consumer's current consumption basket the marginal utility of A is 5 and the marginal utility of B is 3.
- A) The consumer is currently maximizing utility.
B) The consumer could increase utility by consuming more of good A and less of good B.
C) The consumer could increase utility by consuming more of good B and less of good A.
D) Nothing can be said about the consumer's utility because we do not know the consumer's income or utility function.
19. Suppose every automobile requires exactly one engine (E) and four tires (T). The production function for this process is
- A) $Q = E + 4T$
B) $Q = 4E + T$
C) $Q = \min(E, 0.25T)$
D) $Q = \min(4E, T)$
20. Which of the following is not a real-world example of second-degree price discrimination?
- A) A pizza parlor sells large and small pizzas. Although the large pizzas are twice as big as the small pizzas, they cost less than double the price of a small pizza.
B) An electric company sells "blocks" of power at different prices. Specifically, any customer who buys more than Q1 units of electricity can purchase additional units at a lower block price.
C) Sam's Club® warehouses sell bulk quantities of macaroni and cheese for a cheaper per unit price than a grocery store, but the boxes are packaged together so that the customer must buy six boxes at a time.
D) A movie theater charges senior citizens a cheaper price for movie tickets than it charges non-senior citizens for the same movie ticket.
21. The production function $Q = KL$ exhibits
- A) increasing returns to scale.
B) constant returns to scale.
C) decreasing returns to scale.
D) undefined returns to scale.

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22. Which of the following goods/service is an example of a good that is non-rival but exclusive
 A) hunting in a public game area. B) national defense.
 C) public radio. D) a pay-TV channel.
23. Suppose that the market for bicycles is initially in equilibrium. Further suppose that there is an increase in the price of bicycle helmets. Which of the following accurately describes the new equilibrium?
 A) The equilibrium price will rise; the equilibrium quantity will fall.
 B) The equilibrium price will rise; the equilibrium quantity will rise.
 C) The equilibrium price will fall; the equilibrium quantity will fall.
 D) The equilibrium price will fall; the equilibrium quantity will rise.
24. Suppose at the firm's current long-run combination of capital and labor that $MP_K = 15$, $MP_L = 10$, $r = 8$, and $w = 3$. The firm
 A) is currently minimizing total cost in the long run.
 B) could lower cost by increasing the usage of capital and decreasing the usage of labor.
 C) could lower cost by increasing the usage of labor and decreasing the usage of capital.
 D) cannot lower cost without also lowering the level of output.

第二部份：計算題，只須列答案，不必列計算過程。答對每題4分，答錯不倒扣，共28分。

1. Consider a perfectly competitive market with market supply $Q^s = -2 + P$ and market demand $Q^d = 30 - P$. Suppose the government imposes an excise tax of \$4 per unit on this market. What is the deadweight loss from this tax?
2. Suppose that a market is initially in equilibrium. The initial demand curve is $P = 100 - Q^d$. The initial supply curve is $P = 3Q^s$. Suppose that the government imposes a \$4 subsidy on this market. What is the dead-weight loss due to the subsidy?
3. Suppose a monopolist faces demand $P = 400 - 4Q^d$ and has constant marginal cost $MC = 80$. If this monopolist engages in first-degree price discrimination, what is the producer surplus?
4. Consider a lottery with four possible outcomes, A, B, C, and D. The associated payoffs are: A -- \$10, B -- \$30, C -- \$70, and D -- \$150. The probabilities are $P(A) = 0.40$, $P(B) = 0.20$, $P(C) = 0.30$, and $P(D) = 0.10$. What is the expected value of this lottery?
5. Suppose that a particular plant emits a chemical that pollutes the ground water. Without considering the effects of the pollution, the firm has a marginal private cost curve of $MPC = 2Q + 30$. The firm faces a demand curve of $P = 60 - Q$. If the firm were to incorporate the costs of the pollution, the firm would have a marginal social cost curve of $MSC = 4Q + 30$. What is the value of an optimal emissions fee that would achieve the socially optimal level of output?
6. Consider a market with $Q^d = 200 - 10P + I$ and $Q^s = 5P$. Suppose that initially income is $I = 25$, and that income then increases to $I = 55$. What is the increase in consumer surplus from this increase in income?
7. Suppose in a market that market demand is $Q^d = 100 - P$ and market supply is $Q^s = 3P$. If the typical firm in the industry has $STC = 200 + Q + 4Q^2$, how many units should the typical firm produce to maximize profit?

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Multiple-Choice Problem (In this exam there are 50 multiple choice problems with each problem worth 2 points and a total of 100 points.) (皆為單選題)

1. If $P(A) = 0.4$, $P(B|A) = 0.35$, $P(A \cup B) = 0.69$, then $P(B) =$
 - a. 0.14
 - b. 0.43
 - c. 0.75
 - d. 0.59
2. Two events with nonzero probabilities
 - a. can be both mutually exclusive and independent
 - b. can not be both mutually exclusive and independent
 - c. are always mutually exclusive
 - d. are always independent
3. Records of a company show that 20% of the employees have only a high school diploma; 70% have bachelor degrees; and 10% have graduate degrees. Of those with only a high school diploma, 10% hold management positions; whereas, of those having bachelor degrees, 40% hold management positions. Finally, 80% of the employees who have graduate degrees hold management positions. Given that a person holds a management position, what is the probability that she/he has a graduate degree?
 - a. 0.2218
 - b. 0.2198
 - c. 0.2105
 - d. 0.1105
4. The nominal scale of measurement has the properties of the
 - a. ordinal scale
 - b. only interval scale
 - c. ratio scale
 - d. None of these alternatives is correct.
5. The scale of measurement that has an inherent zero value defined is the
 - a. ratio scale
 - b. nominal scale
 - c. ordinal scale
 - d. interval scale
6. Arithmetic operations are inappropriate for
 - a. qualitative data
 - b. quantitative data
 - c. both qualitative and quantitative data
 - d. large data sets
7. Statistical inference
 - a. refers to the process of drawing inferences about the sample based on the characteristics of the population
 - b. is the same as descriptive statistics
 - c. is the process of drawing inferences about the population based on the information taken from the sample
 - d. is the same as a census
8. Since the population size is always larger than the sample size, then the sample statistic
 - a. can never be larger than the population parameter
 - b. can never be equal to the population parameter
 - c. can be smaller, larger, or equal to the population parameter
 - d. can never be smaller than the population parameter
9. The hourly wages of a sample of 130 system analysts are given below.

mean = 60	range = 20
mode = 73	variance = 324
median = 74	

 The coefficient of variation equals

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- a. 0.30%
 - b. 30%
 - c. 5.4%
 - d. 54%
10. If index i (which is used to determine the location of the p th percentile) is not an integer, its value should be
- a. squared
 - b. divided by $(n - 1)$
 - c. rounded down
 - d. rounded up
11. The measure of dispersion that is influenced most by extreme values is
- a. the variance
 - b. the standard deviation
 - c. the range
 - d. the interquartile range
12. The measure of location which is the most likely to be influenced by extreme values in the data set is the
- a. range
 - b. median
 - c. mode
 - d. mean
13. The value of the sum of the deviations from the mean, i.e., $\sum(x - \bar{x})$ must always be
- a. less than the zero
 - b. negative
 - c. either positive or negative depending on whether the mean is negative or positive
 - d. zero
14. A numerical description of the outcome of an experiment is called a
- a. descriptive statistic
 - b. probability function
 - c. variance
 - d. random variable
15. In the textile industry, a manufacturer is interested in the number of blemishes or flaws occurring in each 100 feet of material. The probability distribution that has the greatest chance of applying to this situation is the
- a. normal distribution
 - b. binomial distribution
 - c. Poisson distribution
 - d. uniform distribution
16. The key difference between the binomial and hypergeometric distribution is that with the hypergeometric distribution
- a. the probability of success must be less than 0.5
 - b. the probability of success changes from trial to trial
 - c. the trials are independent of each other
 - d. the random variable is continuous
17. Only 0.02% of credit card holders of a company report the loss or theft of their credit cards each month. The company has 15,000 credit cards in the city of Memphis. Use the Poisson probability tables to determine the expected number of reported lost or stolen credit cards.
- a. 4.03
 - b. 1.57
 - c. 3.0
 - d. 5.0
18. Refer to problem 17. What is the standard deviation for the number of reported lost or stolen cards?
- a. 1.73

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- b. 2.0
c. 3.0
d. 9.0
19. A retailer of electronic equipment received six VCRs from the manufacturer. Three of the VCRs were damaged in the shipment. The retailer sold two VCRs to two customers. What probability distribution can be used to solve for this problem?
a. binomial
b. hypergeometric
c. Poisson
d. Uniform
20. Z is a standard normal random variable. The $P(-1.96 \leq Z \leq -1.4)$ equals
a. 0.8942
b. 0.0558
c. 0.475
d. 0.4192
21. The point estimator with the smaller variance is said to have
a. smaller relative efficiency
b. greater relative efficiency
c. smaller relative consistency
d. greater relative consistency
22. A population has a mean of 80 and a standard deviation of 7. A sample of 49 observations will be taken. The probability that the sample mean will be larger than 82 is
a. 0.5228
b. 0.9772
c. 0.4772
d. 0.0228
23. As the number of degrees of freedom for a t distribution increases, the difference between the t distribution and the standard normal distribution
a. becomes larger
b. becomes smaller
c. stays the same
d. None of these alternatives is correct.
24. In order to use the normal distribution for interval estimation of μ when σ is known and the sample is very small, the population
a. must be very large
b. must have a normal distribution
c. can have any distribution
d. must have a mean of at least 1
25. A sample of 200 elements from a population is selected, and the standard deviation of the sample is computed. For an interval estimation of μ , the proper distribution to use is the
a. normal distribution
b. t distribution with 200 degrees of freedom
c. t distribution with 201 degrees of freedom
d. t distribution with 202 degrees of freedom
26. After computing a confidence interval, the user believes the results are meaningless because the width of the interval is too large. Which one of the following is the best recommendation?
a. Increase the level of confidence for the interval.
b. Decrease the sample size.
c. Increase the sample size.
d. Reduce the population variance.
27. In determining the sample size necessary to estimate a population proportion, which of the following information is **not** needed?
a. the maximum margin of error that can be tolerated
b. the confidence level required

- c. a preliminary estimate of the true population proportion P
d. the mean of the population
28. The manager of a department store wants to determine what proportion of people who enter the store use the store's credit cards for their purchases. What size sample should he take so that at 95% confidence the error will not be more than 6%?
a. 257
b. 357
c. 267
d. 367
29. The p -value is a probability that measures the support for the
a. null hypothesis
b. alternative hypothesis
c. either the null or the alternative hypothesis
d. sample statistic
30. A Type II error is committed when
a. a true alternative hypothesis is mistakenly rejected
b. a true null hypothesis is mistakenly rejected
c. the sample size has been too small
d. not enough information has been available
31. Which of the following does **not** need to be known in order to compute the p -value?
a. knowledge of whether the test is one-tailed or two-tailed
b. the value of the test statistic
c. the level of significance
d. None of these alternatives is correct.
32. Your investment executive claims that the average yearly rate of return on the stocks she recommends is more than 10.0%. You plan on taking a sample to test her claim. The correct set of hypotheses is
a. $H_0: \mu < 10.0\%$ $H_a: \mu \geq 10.0\%$
b. $H_0: \mu \leq 10.0\%$ $H_a: \mu > 10.0\%$
c. $H_0: \mu > 10.0\%$ $H_a: \mu \leq 10.0\%$
d. $H_0: \mu \geq 10.0\%$ $H_a: \mu < 10.0\%$
33. If a hypothesis is rejected at the 5% level of significance, it
a. will always be rejected at the 1% level
b. will always be accepted at the 1% level
c. will never be tested at the 1% level
d. may be rejected or not rejected at the 1% level
34. A random sample of 16 students selected from the student body of a large university had an average age of 25 years and a standard deviation of 2 years. We want to determine if the average age of all the students at the university is significantly more than 24. Assume the distribution of the population of ages is normal. The test statistic is
a. 1.96
b. 2.00
c. 1.645
d. 0.05
35. Independent simple random samples are taken to test the difference between the means of two populations whose variances are not known. The sample sizes are $n_1 = 32$ and $n_2 = 40$. The correct distribution to use is the
a. binomial distribution
b. t distribution with 72 degrees of freedom
c. t distribution with 71 degrees of freedom
d. t distribution with 70 degrees of freedom
36. The standard error of $\bar{x}_1 - \bar{x}_2$ is the
a. variance of $\bar{x}_1 - \bar{x}_2$
b. variance of the sampling distribution of $\bar{x}_1 - \bar{x}_2$

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- c. standard deviation of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
d. difference between the two means
37. An insurance company selected samples of clients under 18 years of age and over 18 and recorded the number of accidents they had in the previous year. The results are shown below.
- | | |
|---------------------------|---------------------------|
| Under Age of 18 | Over Age of 18 |
| $n_1 = 500$ | $n_2 = 600$ |
| Number of accidents = 180 | Number of accidents = 150 |
- We are interested in determining if the accident proportions differ between the two age groups. The test statistic is
- a. 0.96
b. 1.96
c. 2.96
d. 3.96
38. The producer of a certain medicine claims that their bottling equipment is very accurate and that the standard deviation of all their filled bottles is 0.1 ounce or less. A sample of 20 bottles showed a standard deviation of 0.11. The test statistic to test the claim is
- a. 400
b. 22.99
c. 4.85
d. 20
39. To avoid the problem of not having access to tables of the F distribution with values given for the lower tail when a two-tailed test is required, let the smaller sample variance be
- a. the denominator of the test statistic
b. the numerator of the test statistic
c. at least one
d. None of these alternatives is correct.
40. The president of a bank believes that the variance of the deposits of suburban customers is more than the variance of city customers. Below you are given the results of samples taken from suburban and city customers.
- | | | |
|------------------|---------------------------|-----------------------|
| Customers | Suburban Customers | City Customers |
| s | 150 | 90 |
| n | 21 | 19 |
- What is the test statistic?
- a. 2.56
b. 2.87
c. 2.78
d. 3.02
41. In an analysis of variance problem involving 3 treatments and 10 observations per treatment, $SSE = 399.6$. The MSE for this situation is
- a. 133.2
b. 13.32
c. 14.8
d. 30.0
42. An ANOVA procedure is applied to data obtained from 6 samples where each sample contains 20 observations. The degrees of freedom for the critical value of F are
- a. 6 numerator and 20 denominator degrees of freedom
b. 5 numerator and 20 denominator degrees of freedom
c. 5 numerator and 114 denominator degrees of freedom
d. 6 numerator and 20 denominator degrees of freedom
43. $SSTR = 6,750$ $H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4$
 $SSE = 8,000$ $H_a: \text{at least one mean is different}$
 $n_T = 20$ The test statistic to test the null hypothesis equals
- a. 0.22

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- b. 0.84
c. 4.22
d. 4.5
44. In ANOVA, which of the following is not affected by whether or not the population means are equal?
a. \bar{x}
b. between-samples estimate of σ^2
c. within-samples estimate of σ^2
d. None of these alternatives is correct.
45. In regression analysis, which of the following is **not** a required assumption about the error term ε ?
a. The expected value of the error term is one.
b. The variance of the error term is the same for all values of X.
c. The values of the error term are independent.
d. The error term is normally distributed.
46. In simple linear regression analysis, which of the following is not true?
a. The F test and the t test yield the same results.
b. The F test and the t test may or may not yield the same results.
c. The relationship between X and Y is represented by a straight line.
d. The value of $F = t^2$.
47. In a regression and correlation analysis if $r^2 = 1$, then
a. $SSE = SST$
b. $SSE = 1$
c. $SSR = SSE$
d. $SSR = SST$
48. In a regression model involving 44 observations, the following estimated regression equation was obtained.
 $\hat{Y} = 29 + 18X_1 + 43X_2 + 87X_3$ with $SSR = 600$ and $SSE = 400$.
The computed F statistics for testing the significance of the above model is
a. 1.500
b. 20.00
c. 0.600
d. 0.6667
49. The following results were obtained from a multiple regression analysis.
- | Source of Variation | Degrees of Freedom | Sum of Squares | Mean Square | F |
|---------------------|--------------------|----------------|-------------|---|
| Regression | | 384 | 48 | |
| Error | | | 20 | |
| Total | | 704 | | |
- How many observations were involved?
a. 8
b. 25
c. 24
d. 26
50. When dealing with the problem of non-constant variance, the transformation often used is
a. $1/X$ as the independent variable instead of X
b. X^2 as the independent variable instead of X
c. Y^2 as the dependent variable instead of Y
d. $1/Y$ as the dependent variable instead of Y

國立中山大學99學年度碩士班招生考試試題

科目：微積分丙【企管系甲班碩士班丙組選考】

答案請按題號順序寫在答案卷上，違者扣分。

第1題到第16題為簡答題，只需寫下答案。每題5分。

17題與18題，請列出運算過程及結果。

1-3題 求極限

$$1. \lim_{x \rightarrow 1} \frac{\frac{1}{x} - 1}{x - 1}$$

$$2. \lim_{x \rightarrow 0} \frac{x^2 \cos 2x}{1 - \cos x}$$

$$3. \lim_{x \rightarrow 3} f(x) \text{ where } f(x) = \begin{cases} 2(x+1), & x < 3 \\ 4, & x = 3 \\ x^2 - 1, & x > 3 \end{cases}$$

4~9題求積分。

$$4. \int \frac{dx}{2x}$$

$$5. \int \frac{1}{t} \left(\frac{2}{t^2} - \frac{3}{t^3} \right) dt$$

$$6. \int (x^2 \ln x) dx$$

$$7. \int_1^4 \frac{x^2 + x - 1}{\sqrt{x}} dx$$

$$8. \int_0^1 \frac{x^2 - 1}{x^2 + 1} dx$$

$$9. \int \frac{\sin \sqrt{x}}{\sqrt{x}} dx$$

10~16題，求微分。

$$10. f(x) = x^2 - \frac{1}{x^2} + \frac{5}{x^4}$$

$$11. f(x) = \frac{3x+5}{x+9}$$

$$12. f(x) = 2\sin x + \tan x$$

$$13. f(x) = e^x \cos x$$

$$14. f'(4) \text{ where } f(x) = 1 - \frac{1}{x} + \frac{2}{\sqrt{x}}$$

$$15. \text{ If } 4x^2 - y = 100 \text{ and } \frac{dy}{dt} = -6, \text{ Find } \frac{dx}{dt} \text{ at } x = 1.$$

$$16. \text{ Find } \frac{dy}{dx} \text{ where } \ln(xy) = e^{2x}.$$

$$17. \text{ Use Taylor expansion to estimate } \int_0^{1/2} \frac{dx}{1+x^2} \text{ to the 6th decimal place. } 10\%$$

18. Assume that your starting salary is NT\$30,000 a month and you get a raise of \$300 each year. 10%

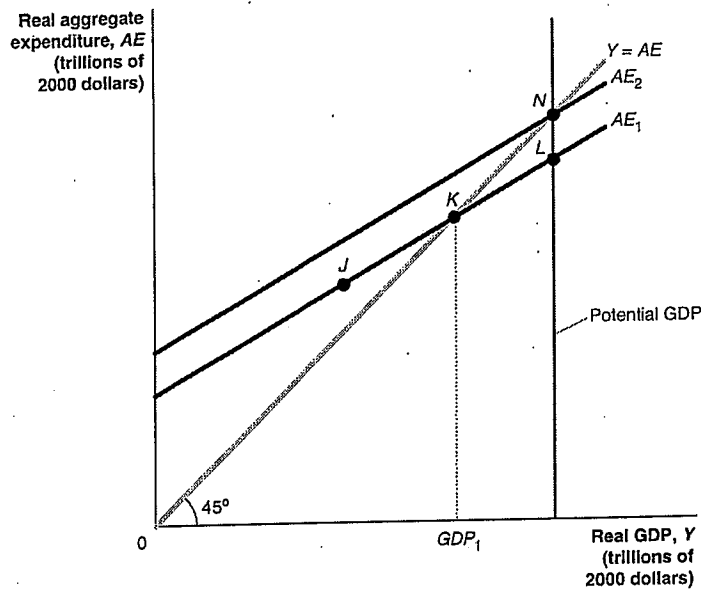
- Express the percentage of rate of change of your salary as a function of time. 5%
- At what percentage rate will your salary be increasing after one year. 5%

國立中山大學99學年度碩士班招生考試試題

科目：經濟學丁【企管系甲班碩士班丁組】

第一部份：單選題，共30分，答對每題3分，答錯不倒扣。

- To raise the interest rate, the FED should do which of the following?
 - Buy government bonds from public
 - Reduce reserve requirements
 - Raise the discount rate
 - None of above
- Refer to the following figure. Potential GDP equals \$100 billion. The economy is currently producing GDP₁ which is equal to \$90 billion. If the MPC is .8, then how much must autonomous spending change for the economy to move to potential GDP?
 - \$18 billion
 - \$2 billion
 - \$2 billion
 - \$18 billion



- The marginal propensity to consume is
 - assumed to be constant in the basic Keynesian model.
 - the amount of consumption for any given level of disposable income.
 - the additional consumption when disposable income rises by \$1.
 - the level of consumption divided by the level of disposable income.
- If inflation in the U.S. is higher than inflation in other countries, what will be the effect on net exports for the U.S.?
 - net exports will rise as U.S. exports increase
 - net exports will decrease as U.S. imports decrease
 - net exports will decrease as U.S. exports decrease
 - net exports will rise as U.S. imports decrease
- If GDP per capita rises by 2% between 2007 and 2008, which of the following is necessarily true?
 - The population has decreased.
 - The population has increased, but by less than 2%.
 - Real GDP has risen by more than 2%.
 - None of the above is necessarily true.
- In the short run, an increase in military spending
 - shifts the aggregate demand curve to the right.
 - shifts the aggregate demand curve to the left.
 - shifts the long run aggregate supply curve to the left.
 - has no effect on aggregate demand

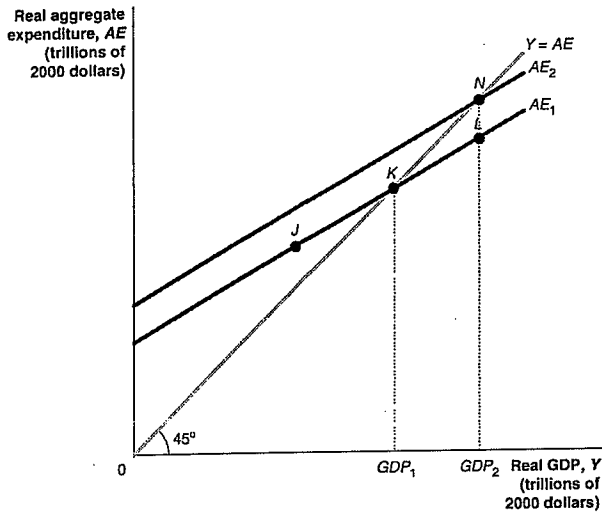
國立中山大學99學年度碩士班招生考試試題

科目：經濟學丁【企管系甲班碩士班丁組】

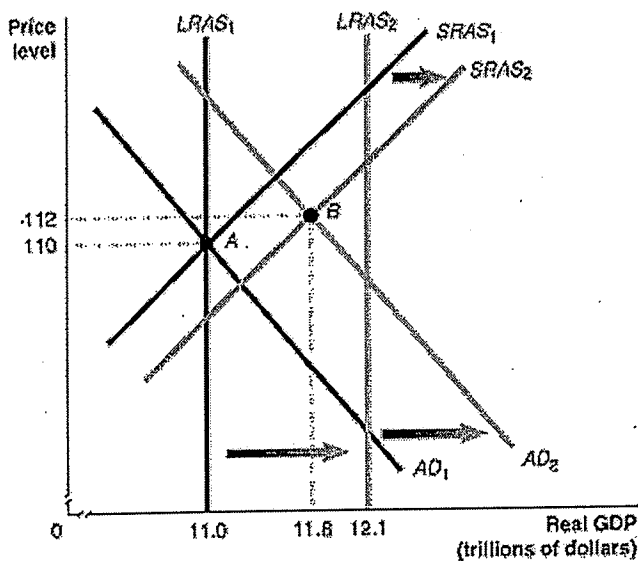
7. When the real interest rate rises, which of the following is true?
 - A) Consumption and planned investment spending rise.
 - B) Consumption and planned investment spending fall.
 - C) Consumption spending rises while planned investment spending falls.
 - D) Consumption spending falls while planned investment spending rises.

8. A decrease in government purchases due to Congressional budget cuts will cause
 - A) AD curve shifts left
 - B) AD curve shifts right
 - C) AS curve shifts right
 - D) AS curve shifts left

9. Refer to the following figure. Suppose that government spending increases, shifting up the aggregate expenditure line. GDP increases from GDP₁ to GDP₂, and this amount is \$400 billion. If the MPC is .75, then what is the distance between N and L or by how much did government spending change?
 - A) \$10 billion
 - B) \$100 billion
 - C) \$200 billion
 - D) \$300 billion



10. In the figure below, LRAS₁ and SRAS₁ denote LRAS and SRAS in year 1, while LRAS₂ and SRAS₂ denote LRAS and SRAS in year 2. Given the economy is at point A in year 1, what is the growth rate in potential GDP in year 2?
 - A) 10%
 - B) 12%
 - C) 9.1%
 - D) 8%



第二部份 計算分析題，共 70 分，請盡可能描述你的經濟邏輯與計算過程。

1. Walter consumes two goods, X and Y . Walter's utility function can be represented by $U = 10X^2Y$. The price of good X is \$2, and the price of good Y is \$1. Walter has \$30 to spend on the purchases of goods X and Y . If Walter is maximizing his utility subject to his budget constraint, how many units of goods X and Y should he buy? (10 分)
2. Charlie consumes two goods, professional baseball games (B) and mystery novels (N). The price of baseball games is P_B ; the price of mystery novels is P_N . Charlie has an income of I to spend on these two goods. Charlie's utility function can be represented as $U = B^2N$, with $MU_B = 2BN$ and $MU_N = B^2$. What is the equation for the demand curve for mystery novels and baseball games? (10 分)
3. Consider the short-run production function (10 分，各 5 分)

$$Q = 50L + 100\bar{K}$$

- a) Derive the cost-minimizing quantity of labor as a function of output and capital.
 - b) Assume the price of labor is $w = 10$ and the rental rate of capital is $r = 40$. Derive the short-run total cost function.
4. Dave and Carolyn run a landscaping company. They employ people and rent equipment to dig holes for tree planting. They rent power auger machines, which need two people to run each machine. The production function can be written as $Q = \min\{10K, 5L\}$. Dave and Carolyn pay their workers \$10 per hour. The machines rent for \$20 per hour. Dave and Carolyn need to dig 500 holes by the end of the week. (10 分，各 5 分)
 - a) In order to minimize their costs for this level of output, how many labor hours should they hire? How many machine hours should they rent?
 - b) What is the total cost of digging the 500 holes?
 5. Suppose a profit-maximizing monopolist producing Q units of output faces the demand curve $P = 100 - Q$. Its total cost when producing Q units of output is $TC = Q^2 + 10Q + 10$. (10 分，各 5 分)
 - a) Suppose price discrimination is impossible. How large will the profit be? How large is the producer surplus?
 - b) Suppose the firm can engage in perfect first-degree price discrimination. How large will the profit be? How large is the producer surplus?
 6. 請看完底下新聞後回答下列問題：(20 分，各 10 分)
 - a) 試以外匯市場的供需模型，說明為何越南盾為何持續走貶。
 - b) 請利用 AD-AS 模型分析，說明越南通貨膨脹的來源為何？根據你所學的，越南的央行又該如何做來減低通貨膨脹？

亞洲新小龍泡沫？越南盾可能再貶 40%

國立中山大學 99 學年度碩士班招生考試試題

科目：經濟學丁【企管系甲班碩士班丁組】

越南經濟近年來持續成長，外資趨之若鶩，讓越南隱然成為「亞洲新小龍」，但今年多項經濟指標卻亮起紅燈，更叫人關注的是越南盾不斷貶值，遠期外匯交易顯示，未來 12 個月越南盾兌美元可能會再暴跌近 40%。經濟學家警告，越南過熱的經濟可能已出現泡沫化跡象。

越南盾在今年 3 月下旬重挫，匯率一路下滑，最近每天都貶值 5 至 7 個百分點，上周五黑市價格寫下 1 萬 8500 元兌 1 美元的紀錄，遠高於 1 萬 6000 左右的官方匯率。由於貶值速度過快，河內每一小時公布一次越南盾兌美元的匯率，由遠期外匯交易來看，一年內幣值可能跌至 2.4 萬越南盾兌 1 美元。

越南在 2007 年加入世界貿易組織 (WTO) 後，各方普遍看好工資低廉的越南可望成為「迷你中國」，外資大量湧入，國內投資人爭相投入一飛沖天的股市，政府花錢如流水，銀行勇於貸款，越南一副亞洲新小龍的架勢。

但連年高速成長已使經濟開始過熱，越南成長運轉已開始不順，高達 60 億美元的外國直接投資讓經濟難以消化，造成兩位數的通膨率，在全球糧食和能源危機影響下通膨日益嚴重。越南民眾對越南盾信心盡失，爭相把手上的越南盾兌換成美元或黃金，形成骨牌效應，通膨更一發不可收拾。

政府雖然嚴控糧食、石油及電價，5 月份通膨率仍寫下 13 年來最高達紀錄的 25.2%，HSBC 預測，越南通膨率可能達 30%。另一紅燈警訊則是貿易赤字迅速擴大，今年 1 至 5 月的貿易赤字達 144 億美元，遠高於去年全年的 120 億美元。

在信用緊縮和投資人信心崩潰下，越南股市由全球最佳擺盪到最差，今年頭 5 個月股票指數下跌超過 55%，跌幅為全球之冠。上周越南股市跌到 400 點以下，和去年 3 月的 1100 點不可同日而語，房地產價格今年也暴跌 50%。

有些分析師擔心，越南的金融及貨幣危機一觸即發，情況與亞洲金融風暴爆發前的泰國相似，可能對中國、以至亞太經濟產生連鎖反應。

Aseambankers Research 指出，越南最糟糕的情況是外資大舉撤走、引起國際收支帳危機，迫使越南向國際貨幣基金 (IMF) 求救。顧問公司 DSG Asia 分析師認為，越南可能在 6 個月內就需要 IMF 式的協助。

國立中山大學99學年度碩士班招生考試試題

科目：商用統計學丁【企管系甲班碩士班丁組選考】

Multiple-Choice Problem (In this exam there are 50 multiple choice problems with each problem worth 2 points and a total of 100 points.)

(皆為單選題)

01. A Type II error is committed when
 - a. a true alternative hypothesis is mistakenly rejected
 - b. a true null hypothesis is mistakenly rejected
 - c. the sample size has been too small
 - d. not enough information has been available
02. As the number of degrees of freedom for a t distribution increases, the difference between the t distribution and the standard normal distribution
 - a. becomes larger
 - b. becomes smaller
 - c. stays the same
 - d. None of these alternatives is correct.
03. In order to use the normal distribution for interval estimation of μ when σ is known and the sample is very small, the population
 - a. must be very large
 - b. must have a normal distribution
 - c. can have any distribution
 - d. must have a mean of at least 1
04. Which of the following does **not** need to be known in order to compute the p -value?
 - a. knowledge of whether the test is one-tailed or two-tailed
 - b. the value of the test statistic
 - c. the level of significance
 - d. None of these alternatives is correct.
05. After computing a confidence interval, the user believes the results are meaningless because the width of the interval is too large. Which one of the following is the best recommendation?
 - a. Increase the level of confidence for the interval.
 - b. Decrease the sample size.
 - c. Increase the sample size.
 - d. Reduce the population variance.
06. In determining the sample size necessary to estimate a population proportion, which of the following information is **not** needed?
 - a. the maximum margin of error that can be tolerated
 - b. the confidence level required
 - c. a preliminary estimate of the true population proportion P
 - d. the mean of the population
07. The producer of a certain medicine claims that their bottling equipment is very accurate and that the standard deviation of all their filled bottles is 0.1 ounce or less. A sample of 20 bottles showed a standard deviation of 0.11. The test statistic to test the claim is
 - a. 400
 - b. 22.99
 - c. 4.85
 - d. 20
08. To avoid the problem of not having access to tables of the F distribution with values given for the lower tail when a two-tailed test is required, let the smaller sample variance be
 - a. the denominator of the test statistic
 - b. the numerator of the test statistic
 - c. at least one
 - d. None of these alternatives is correct.
09. The president of a bank believes that the variance of the deposits of suburban customers is more than the variance of city customers. Below you are given the results of samples taken from suburban and city customers.

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科目：商用統計學丁【企管系甲班碩士班丁組選考】

- | | Customers | Suburban Customers | City Customers |
|--|-----------|--------------------|----------------|
| | s | 150 | 90 |
| | n | 21 | 19 |
- What is the test statistic?
- 2.56
 - 2.87
 - 2.78
 - 3.02
- In an analysis of variance problem involving 3 treatments and 10 observations per treatment, $SSE = 399.6$. The MSE for this situation is
 - 133.2
 - 13.32
 - 14.8
 - 30.0
 - An ANOVA procedure is applied to data obtained from 6 samples where each sample contains 20 observations. The degrees of freedom for the critical value of F are
 - 6 numerator and 20 denominator degrees of freedom
 - 5 numerator and 20 denominator degrees of freedom
 - 5 numerator and 114 denominator degrees of freedom
 - 6 numerator and 20 denominator degrees of freedom
 - The manager of a department store wants to determine what proportion of people who enter the store use the store's credit cards for their purchases. What size sample should he take so that at 95% confidence the error will not be more than 6%?
 - 257
 - 357
 - 267
 - 367
 - The p -value is a probability that measures the support for the
 - null hypothesis
 - alternative hypothesis
 - either the null or the alternative hypothesis
 - sample statistic
 - Your investment executive claims that the average yearly rate of return on the stocks she recommends is more than 10.0%. You plan on taking a sample to test her claim. The correct set of hypotheses is
 - $H_0: \mu < 10.0\%$ $H_a: \mu \geq 10.0\%$
 - $H_0: \mu \leq 10.0\%$ $H_a: \mu > 10.0\%$
 - $H_0: \mu > 10.0\%$ $H_a: \mu \leq 10.0\%$
 - $H_0: \mu \geq 10.0\%$ $H_a: \mu < 10.0\%$
 - If a hypothesis is rejected at the 5% level of significance, it
 - will always be rejected at the 1% level
 - will always be accepted at the 1% level
 - will never be tested at the 1% level
 - may be rejected or not rejected at the 1% level
 - A random sample of 16 students selected from the student body of a large university had an average age of 25 years and a standard deviation of 2 years. We want to determine if the average age of all the students at the university is significantly more than 24. Assume the distribution of the population of ages is normal. The test statistic is
 - 1.96
 - 2.00
 - 1.645
 - 0.05
 - The scale of measurement that has an inherent zero value defined is the
 - ratio scale
 - nominal scale

- c. ordinal scale
d. interval scale
18. In a regression and correlation analysis if $r^2 = 1$, then
a. $SSE = SST$
b. $SSE = 1$
c. $SSR = SSE$
d. $SSR = SST$
19. In a regression model involving 44 observations, the following estimated regression equation was obtained.
 $\hat{Y} = 29 + 18X_1 + 43X_2 + 87X_3$ with $SSR = 600$ and $SSE = 400$.
The computed F statistics for testing the significance of the above model is
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- | Source of Variation | Degrees of Freedom | Sum of Squares | Mean Square | F |
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| Regression | | 384 | 48 | |
| Error | | | 20 | |
| Total | | 704 | | |
- How many observations were involved?
a. 8
b. 25
c. 24
d. 26
21. When dealing with the problem of non-constant variance, the transformation oftenly used is
a. $1/X$ as the independent variable instead of X
b. X^2 as the independent variable instead of X
c. Y^2 as the dependent variable instead of Y
d. $1/Y$ as the dependent variable instead of Y
22. The measure of dispersion that is influenced most by extreme values is
a. the variance
b. the standard deviation
c. the range
d. the interquartile range
23. The measure of location which is the most likely to be influenced by extreme values in the data set is the
a. range
b. median
c. mode
d. mean
24. Independent simple random samples are taken to test the difference between the means of two populations whose variances are not known. The sample sizes are $n_1 = 32$ and $n_2 = 40$. The correct distribution to use is the
a. binomial distribution
b. t distribution with 72 degrees of freedom
c. t distribution with 71 degrees of freedom
d. t distribution with 70 degrees of freedom
25. The standard error of $\bar{x}_1 - \bar{x}_2$ is the
a. variance of $\bar{x}_1 - \bar{x}_2$
b. variance of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
c. standard deviation of the sampling distribution of $\bar{x}_1 - \bar{x}_2$
d. difference between the two means
26. An insurance company selected samples of clients under 18 years of age and

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科目：商用統計學丁【企管系甲班碩士班丁組選考】

over 18 and recorded the number of accidents they had in the previous year. The results are shown below.

Under Age of 18

$$n_1 = 500$$

Number of accidents = 180

Over Age of 18

$$n_2 = 600$$

Number of accidents = 150

We are interested in determining if the accident proportions differ between the two age groups. The test statistic is

- a. 0.96
 - b. 1.96
 - c. 2.96
 - d. 3.96
27. $SSTR = 6,750$ $H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4$
 $SSE = 8,000$ $H_a: \text{at least one mean is different}$
 $n_T = 20$ The test statistic to test the null hypothesis equals
- a. 0.22
 - b. 0.84
 - c. 4.22
 - d. 4.5
28. In ANOVA, which of the following is not affected by whether or not the population means are equal?
- a. \bar{x}
 - b. between-samples estimate of σ^2
 - c. within-samples estimate of σ^2
 - d. None of these alternatives is correct.
29. In regression analysis, which of the following is not a required assumption about the error term ϵ ?
- a. The expected value of the error term is one.
 - b. The variance of the error term is the same for all values of X.
 - c. The values of the error term are independent.
 - d. The error term is normally distributed.
30. In simple linear regression analysis, which of the following is not true?
- a. The F test and the t test yield the same results.
 - b. The F test and the t test may or may not yield the same results.
 - c. The relationship between X and Y is represented by a straight line.
 - d. The value of $F = t^2$.
31. The nominal scale of measurement has the properties of the
- a. ordinal scale
 - b. only interval scale
 - c. ratio scale
 - d. None of these alternatives is correct.
32. The value of the sum of the deviations from the mean, i.e., $\sum(x - \bar{x})$ must always be
- a. less than the zero
 - b. negative
 - c. either positive or negative depending on whether the mean is negative or positive
 - d. zero
33. A numerical description of the outcome of an experiment is called a
- a. descriptive statistic
 - b. probability function
 - c. variance
 - d. random variable
34. If $P(A) = 0.4$, $P(B|A) = 0.35$, $P(A \cup B) = 0.69$, then $P(B) =$
- a. 0.14
 - b. 0.43
 - c. 0.75
 - d. 0.59

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科目：商用統計學丁【企管系甲班碩士班丁組選考】

35. Two events with nonzero probabilities
- can be both mutually exclusive and independent
 - can not be both mutually exclusive and independent
 - are always mutually exclusive
 - are always independent
36. Records of a company show that 20% of the employees have only a high school diploma; 70% have bachelor degrees; and 10% have graduate degrees. Of those with only a high school diploma, 10% hold management positions; whereas, of those having bachelor degrees, 40% hold management positions. Finally, 80% of the employees who have graduate degrees hold management positions. Given that a person holds a management position, what is the probability that she/he has a graduate degree?
- 0.2218
 - 0.2198
 - 0.2105
 - 0.1105
37. Arithmetic operations are inappropriate for
- qualitative data
 - quantitative data
 - both qualitative and quantitative data
 - large data sets
38. Statistical inference
- refers to the process of drawing inferences about the sample based on the characteristics of the population
 - is the same as descriptive statistics
 - is the process of drawing inferences about the population based on the information taken from the sample
 - is the same as a census
39. The point estimator with the smaller variance is said to have
- smaller relative efficiency
 - greater relative efficiency
 - smaller relative consistency
 - greater relative consistency
40. A retailer of electronic equipment received six VCRs from the manufacturer. Three of the VCRs were damaged in the shipment. The retailer sold two VCRs to two customers. What probability distribution can be used to solve for this problem?
- binomial
 - hypergeometric
 - Poisson
 - Uniform
41. Z is a standard normal random variable. The $P(-1.96 \leq Z \leq -1.4)$ equals
- 0.8942
 - 0.0558
 - 0.475
 - 0.4192
42. A population has a mean of 80 and a standard deviation of 7. A sample of 49 observations will be taken. The probability that the sample mean will be larger than 82 is
- 0.5228
 - 0.9772
 - 0.4772
 - 0.0228
43. A sample of 200 elements from a population is selected, and the standard deviation of the sample is computed. For an interval estimation of μ , the proper distribution to use is the
- normal distribution
 - t distribution with 200 degrees of freedom

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- c. t distribution with 201 degrees of freedom
d. t distribution with 202 degrees of freedom
44. Since the population size is always larger than the sample size, then the sample statistic
- can never be larger than the population parameter
 - can never be equal to the population parameter
 - can be smaller, larger, or equal to the population parameter
 - can never be smaller than the population parameter
45. The hourly wages of a sample of 130 system analysts are given below.
- | | |
|-------------|----------------|
| mean = 60 | range = 20 |
| mode = 73 | variance = 324 |
| median = 74 | |
- The coefficient of variation equals
- 0.30%
 - 30%
 - 5.4%
 - 54%
46. If index i (which is used to determine the location of the p th percentile) is not an integer, its value should be
- squared
 - divided by $(n - 1)$
 - rounded down
 - rounded up
47. In the textile industry, a manufacturer is interested in the number of blemishes or flaws occurring in each 100 feet of material. The probability distribution that has the greatest chance of applying to this situation is the
- normal distribution
 - binomial distribution
 - Poisson distribution
 - uniform distribution
48. The key difference between the binomial and hypergeometric distribution is that with the hypergeometric distribution
- the probability of success must be less than 0.5
 - the probability of success changes from trial to trial
 - the trials are independent of each other
 - the random variable is continuous
49. Only 0.02% of credit card holders of a company report the loss or theft of their credit cards each month. The company has 15,000 credit cards in the city of Memphis. Use the Poisson probability tables to determine the expected number of reported lost or stolen credit cards.
- 4.03
 - 1.57
 - 3.0
 - 5.0
50. Refer to problem 49. What is the standard deviation for the number of reported lost or stolen cards?
- 1.73
 - 2.0
 - 3.0
 - 9.0

國立中山大學99學年度碩士班招生考試試題

科目：微積分丁【企管系甲班碩士班丁組選考】

答案請按題號順序寫在答案卷上，違者扣分。

第1題到第16題為簡答題，只需寫下答案。每題5分。

17題與18題，請列出運算過程及結果。

1-3題 求極限

1. $\lim_{x \rightarrow 1} \frac{\frac{1}{x} - 1}{x - 1}$

2. $\lim_{x \rightarrow 0} \frac{x^2 \cos 2x}{1 - \cos x}$

3. $\lim_{x \rightarrow 3} f(x)$ where $f(x) = \begin{cases} 2(x+1), & x < 3 \\ 4, & x = 3 \\ x^2 - 1, & x > 3 \end{cases}$

4~9題求積分。

4. $\int \frac{dx}{2x}$

5. $\int \frac{1}{t} \left(\frac{2}{t^2} - \frac{3}{t^3} \right) dt$

6. $\int (x^2 \ln x) dx$

7. $\int_1^4 \frac{x^2 + x - 1}{\sqrt{x}} dx$

8. $\int_0^1 \frac{x^2 - 1}{x^2 + 1} dx$

9. $\int \frac{\sin \sqrt{x}}{\sqrt{x}} dx$

10~16題，求微分。

10. $f(x) = x^2 - \frac{1}{x^2} + \frac{5}{x^4}$

11. $f(x) = \frac{3x+5}{x+9}$

12. $f(x) = 2\sin x + \tan x$

13. $f(x) = e^x \cos x$

14. $f'(4)$ where $f(x) = 1 - \frac{1}{x} + \frac{2}{\sqrt{x}}$

15. If $4x^2 - y = 100$ and $\frac{dy}{dt} = -6$, Find $\frac{dx}{dt}$ at $x = 1$.

16. Find $\frac{dy}{dx}$ where $\ln(xy) = e^{2x}$.

17. Use Taylor expansion to estimate $\int_0^{1/2} \frac{dx}{1+x^2}$ to the 6th decimal place. 10%

18. Assume that your starting salary is NT\$30,000 a month and you get a raise of \$300 each year. 10%

- a. Express the percentage of rate of change of your salary as a function of time. 5%
- b. At what percentage rate will your salary be increasing after one year. 5%