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## I. MULTIPLE CHOICE QUESTIONS

- 1. Assume that event A is a subset of event B. If event B is known not to occur, the probability of the occurrence of event A is
  - (a) one
  - (b) zero
  - (c) any positive value
  - (d) any value between 0 to 1
- 2. A regression analysis between sales (Y in \$1000) and income (X in dollars) resulted in the following equation

$$\hat{Y} = 30,000 + 4 X$$

The above equation implies that an

- (a) increase of \$1 in income is associated with an increase of \$4,000 in sales
- (b) increase of \$1 in income is associated with an increase of \$4 in sale
- (c) increase of \$1,000 in income is associated with an increase of \$4,000 in sales
- (d) increase of \$1,000 in income is associated with an increase of \$4 in sales

3. An ANOVA procedure is applied to data obtained from 4 samples where each sample contains 30 observations. The numerator and denominator degree(s) of freedom (respectively) for the critical value of F are \_\_\_\_\_ and \_\_\_\_\_ .

- (a) 4 and 120
- (b) 3 and 120
- (c) 4 and 116
- (d) 3 and 116

4. If the moment-generating function of X is  $0.3 e^{-3t} + 0.45 + 0.25 e^{2t}$ , then the probability of X to be zero is

- (a) 0.3
- (b) 0.45
- (c) 0.2
- (d) 0
- 5. To compute an interval estimate for the difference between the means of two populations when samples are small, the t distribution can be used if it can be assumed that
  - (a) the populations are normally distributed and the variances are equal
  - (b) the variances are not equal
  - (c) the population proportions are equal
  - (d) the population means are equal

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- 6. The random variable for a F distribution may assume
  - (a) any value between -1 to 1
  - (b) any value between infinity to + infinity
  - (c) any negative value
  - (d) any value greater than zero

7. A property of a point estimator that occurs whenever larger sample sizes tend to provide point estimates closer to the population parameter is known as

- (a) efficiency
- (b) unbiasedness
- (c) sufficiency
- (d) consistency
- 8. The sampling distribution for a goodness of fit test is
  - (a) the Poisson distribution
  - (b) the t distribution
  - (c) the chi-square distribution
  - (d) the normal distribution
- 9. In regression analysis, an outlier is an observation whose
  - (a) mean is larger than the standard deviation
  - (b) residual is zero
  - (c) mean is zero
  - (d) residual is much larger than the rest of the residual values
- 10. When sampling without replacement, the probability of obtaining a certain sample is best given by a
  - (a) geometric distribution
  - (b) binomial distribution
  - (c) hypergeometric distribution
  - (d) Poisson distribution
- 11. The measure of location which is the most likely to be influenced by extreme values in the data set is the
  - (a) trimmed mean
  - (b) mean
  - (c) median
  - (d) mode

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- 12. A numerical description of the outcome of an experiment is called a
  - (a) random variable
  - (b) probability
  - (c) event
  - (d) probability density function

13. Convenience sampling is an example of

- (a) probabilistic sampling
- (b) nonprobabilistic sampling
- (c) cluster sampling
- (d) stratified sampling

14. In hypothesis testing, the hypothesis tentatively assumed to be true is

- (a) the null alternative hypothesis
- (b) the alternative hypothesis
- (c) either the null or the alternative
- (d) None of these alternatives is correct.

15. A variable that takes on the values of 0 or 1 and is used to incorporate the effect of qualitative variables in a regression model is called

- (a) an interaction
- (b) a constant variable
- (c) a dummy variable
- (d) None of these alternatives is correct.

16. If a hypothesis is rejected at the 10% level of significance, it

- (a) will always be rejected at the 5% level
- (b) will always be accepted at the 5% level
- (c) will never be tested at the 5% level
- (d) may be rejected or not rejected at the 5% level
- 17. The ANOVA procedure is a statistical approach for determining whether or not
  - (a) the means of two samples are equal
  - (b) the means of two or more samples are equal
  - (c) the means of more than two samples are equal
  - (d) the means of two or more populations are equal

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- 18. Whenever using the t distribution in estimation, we must assume that
  - (a) the population is approximately normal
  - (b) the sample size is at least 30
  - (c) the sampling distribution is approximately normal
  - (d) the finite population correction factor is necessary

19. If Prob(A) = 0.4, Prob(B | A) = 0.35,  $Prob(A \cup B) = 0.69$ , then Prob(B) =

- (a) 0.29
- (b) 0.14
- (c) 0.43
- (d) None of these alternatives is correct.
- 20.In the past the average age of employees of a large corporation has been 40 years. Recently, the company has been hiring older individuals. In order to determine whether there has been an increase in the average age of all the employees, a sample of 25 employees was selected. The alternative hypotheses is
  - (a)  $\mu > 40$
  - (b)  $\mu < 40$
  - (c)  $\mu \neq 40$
  - (d)  $\mu = 40$
- II. The joint density of Y, the proportion of the capacity of the tank that is stocked at the beginning of the day, and X, the proportion of the capacity sold during the day, is given by (20%)

$$f_{XY}(x, y) = \begin{cases} 2, & 0 < x < y, 0 < y < 1 \\ 0, & \text{elsewhere} \end{cases}$$

- (a) Find Prob(0 < X < 1/2).
- (b) Find Prob(0 < X < 1/2 | Y = 3/4).

III. Let  $X_1, X_2, \dots, X_n$  be a random sample from a distribution with p.d.f. (20%)

$$f(x;\theta) = (1/\theta) \exp(-x/\theta), \quad 0 < x < \infty, \quad 0 < \theta < \infty.$$

- (a) Find the estimator  $\tilde{\theta}$  for  $\theta$  by the method of moment.
- (b) Is  $\tilde{\theta}$  a consistent estimator of  $\theta$ ?
- (c) Find the maximum likelihood estimator  $\hat{\theta}$  of  $\theta$ .
- (d) Find a sufficient statistic of  $\theta$ .

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# I. (60%)MULTIPLE CHOICE QUESTION 所有的答案請寫在答案卷,答案寫法如下列所示:

All answers must be written on the answer sheet

#### for example:

1	а	6	b	11	16	
2	b	7	с	12	17	
3	с	8	d	13	18	
4	d	9	а	14	19	
5	а	10	b	15	20	

## 1. In computing GDP,

A) the value of intermediate goods is included in the market price of the final goods.

B) expenditures on used goods are included.

C) production added to inventories is excluded.

D) the amount of production in the underground economy is imputed.

- 2. The quantity equation for money, by itself,
  - A) implies that real gross domestic product (GDP) is proportional to the money supply.

B) may be thought of as a definition for velocity.

C) implies that the velocity of money is constant.

D) implies that the price level is proportional to the money supply.

3. If domestic saving is less than domestic investment, then net exports are \_\_\_\_\_ and net capital outflows are \_\_\_\_\_.

- A) negative; negative
- B) negative; positive
- C) positive ; negative
- D) positive ;positive

4. If the steady-state rate of unemployment equals 0.2 and the fraction of employed workers who lose their jobs each month (the rate of job separation) is 0.02, then the fraction of unemployed workers who find jobs each month (the rate of job findings) must be

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- A) 0.16.B) 0.18.C) 0.2.
- D) 0.24.

5. If the per-worker production function is given by  $y = k^{1/2}$ , the growth rate of labor is 0, the saving rate (*s*) is 0.4, and the depreciation rate is 0.2, then the steady-state ratio of capital to labor is:

A) 1.

B) 2.

C) 4.

D) 9.

6. 6 In the Keynesian-cross model, as the interest rate increases, the equilibrium level of income \_\_\_\_\_, whereas in the loanable funds model, as the level of income increases, the equilibrium level of the interest rate \_\_\_\_\_.

- A) increases; increases
- B) increases; decreases
- C) decreases; increases
- D) decreases; decreases
- 7. Which of the following statements is true?
  - A) Ricardion Equivalent Theorem means tax reduction policy has no effects on national income in the long run.
  - B) Laffer curve proposes that the relationship of national income and tax rate is a "U" shape curve.
  - C) Fiscal policy cannot improve employment when investment trap prevails.
  - D) Full employment is the assumption of the Classical School.

8. In a two period model, if the income of the consumer in each period is positive, when the interest rate rises, then

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- A) the consumer will increase saving.
- B) the consumer's utility will go down.
- C) the consumption in both periods will go down.
- D) the present value of his income will go down.

9. If the labor market is monopolized by the labor union, then compared with perfect competition labor market, the wage rate will \_\_\_\_\_ and the employment will\_\_\_\_\_.

- A) increase; decrease
- B) decrease; decrease
- C) increase; increase
- D) decrease; decrease.

10. Adverse selection comes from

- A) imperfect competition.
- B) incomplete information.
- C) unemployment.
- D) production externality.
- 11. Diminishing marginal return implies

A)constant return to scale.

- B) decreasing return to scale.
- C) increasing return to scale.
- D) increasing marginal cost.

12. A monopoly faces a linear demand function and constant marginal cost. When the government impose a \$ 10 specific tax on the product, the price of the product will rise by

- A) \$1.
- B) \$2.
- C) \$5.
- D) \$ 8.

13. There are farmers A and B selling homogenous mongo in the evening market. The demand function of mongo is P = 10 - Q. It costs farmer A \$ 5 while farmer B \$3 to produce per unit of mongo, they have no other fixed cost. If the two farmers engage in Bertrand competition, the equilibrium price of per unit mongo will be

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- A) \$3.
- B) \$4.
- C) \$5.
- D) \$8.

14. In the long run equilibrium of a perfect competition market, every firm

- A) makes positive profit.
- B) produces at the optimal scale.
- C) advertises.
- D) sets entry barriers.

15. Which of the following statements is false?

- A) The state of Pareto optimal means to help somebody must hurt somebody.
- B) Walras's Law indeed is the budget constraint of the decision makers.
- C) First welfare theorem means perfect competition always leads to consumption, production and resource allocation efficiency even when there is production externality.
- D) Imperfect perfect competition some times can lead to resource allocation efficiency.

16. There are firm T and Firm N in the car industry, they can only choose one of big car and small care to produce and sell. If both firm sells big car, both firms can make 20 billion dollars, if both sell small car, both firms can make 30 billion dollars; if one firm sells small car yet the another firm sells big car, the one sells small car will make 60 billion dollars , yet another one will make 40 billion dollars. If firm T chooses the type of car firstly, then firm N chooses secondly. In Nash equilibrium,

- A) firm T makes 60 billion and firm N makes 40 billion.
- B) both firms make 20 billion.
- C) both firms make 40 billion.
- D) firm T makes 40 billion and firm N makes 60 billion.

17. Jordan's a utility function is U = 2x + 3y, the unit prices of x and y are \$10 and \$30. If Jordan spends \$150 on x and y to maximize his utility, he will purchase \_\_\_\_\_ unit of x and \_\_\_\_\_ unit of y?

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- A)15;0
- B) 15; 5
- C) 0; 5
- D) 10;10

18. The monopolistic firm

- A) always makes a positive profit.
- B) always produce less than the optimal scale.
- C) will not raise the price if his fixed cost rises.
- D) always engages in research and development.
- 19. An effective wage floor will lead to
  - A) rise of total wage.
  - B) unemployment.
  - C) strike.
  - D) no effect on the labor market.

20. Which of the following scholars proposed that profit comes from innovation?

- A) Paul Robin Krugman
- B) Joseph Alois Schumpeter
- C) Karl Heinrich Marx
- D) John Maynard Keynes
- II. (20%) Joe Shoes company is a monopolist in both Taiwan and Japan markets. The shoes demand functions of Taiwan and Japan are  $P^T = 160 Q^T$  and  $P^J = 200 2Q^J$ , respectively. The company only has a plant located in Taiwan to supply both markets. Its total cost function is  $TC = Q^2 + 200$ , where Q is total product. Japanese government imposes a \$20 specific tax on each unit of shoes imported from Taiwan. If Joe Shoes company discriminates the prices in these two markets to maximize total profit, what are the optimal prices  $P^T$  and  $P^J$ ? quantities  $Q^T$  and  $Q^J$ ? Total profit  $\pi$ ? The social welfare of Taiwan and Japan, respectively?
- III. (20%)(Supply side economics model) A small close economy is described by the following equations: production function:  $Y = 4(5N 0.0025N^2)$ , labor supply function :

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 $N^{s} = -44 + 10(1 - \tau) \frac{W}{P}$ , consumption expenditure: C = 400 + 0.8(Y - T), investment

expenditure : I = 334 - 500R, demand of real balance: L = 0.4Y - 500R, come tax  $: T = \tau Y$ , money supply: M = 3550, where Y is national income, N is the amount of Labor,  $\tau$  is income tax rate, W is nominal wage rate, R is nominal interest rate, P is price level. Please find the equilibrium values of  $P \times Y \times W \to R \times T$  and N.

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#### I. Multiple Choice Questions (60 points)

#### Please select <u>ONE</u> most appropriate answer in the following questions.

- () 1. Which of the following statements is **FALSE**?
  - A) Planning provides direction to managers and non-managers alike.
  - B) Managers exclusively play the role of change agents.
  - C) Work specialization is also known as division of labor.
  - D) Controlling is the process of monitoring, comparing, and correcting work performance.

#### () 2. Which of the following statements is <u>**TRUE**</u>?

- A) Organizational behavior is concerned only with group interactions.
- B) Exceptional or unique organizational resources are known as core capabilities.
- C) In communication, the process of decoding is performed by the receiver.
- D) Global teams are associated with high levels of groupthink.
- ( ) 3. If Tim accomplishes his projects with high-quality results, but takes more time than other managers in the process, as a manager, he is \_\_\_\_\_.
  - A) efficient, but ineffective
  - B) a leader, but not a top manager
  - C) project oriented, but not effective
  - D) effective, but inefficient
- ( ) 4. Mary wants to introduce a new model to the product line. She develops three alternatives and will choose only one. She has decided to focus on target market size, production costs, and net profits. These are Mary's \_\_\_\_\_.

A) models

- B) criterion weights
- C) decision criteria
- D) problems
- ( ) 5. Amour Company creates a partnership with a foreign company. Both the partners share resources and knowledge while developing new products. Amour Company forms a

- B) franchising company
- C) strategic alliance
- D) foreign subsidiary

A) licensing company

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( ) 6. When managers make decisions that are rational but limited by their ability to process the information, they are following the concept of \_\_\_\_\_.

A) cognitive decision making

B) bounded rationality

C) escalation of commitment

D) intuitive decision making

( ) 7. The major value-creating capabilities of the organization are known as its \_\_\_\_\_

- A) strengths
- B) competitive advantages
- C) core competencies
- D) resources

( ) 8. The \_\_\_\_\_\_ decentralizes its management and other decisions to the local country.

- A) multidomestic corporation
- B) global company
- C) transnational organization
- D) borderless organization

( ) 9. \_\_\_\_\_ refers to a term that describes a tendency or preference toward a particular perspective or ideology.

A) Impartiality

- B) Prejudice
- C) Bias
- D) Reasoning

( ) 10. A \_\_\_\_\_\_ describes the rationale of how a company is going to make money.

A) functional strategy

B) business model

C) SWOT analysis

D) core competency

( ) 11. According to Kurt Lewin, increasing the driving forces is a means of \_\_\_\_\_\_

- A) unfreezing
- B) changing
- C) restraining
- D) refreezing

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- ( ) 12. A \_\_\_\_\_\_ is a formal statement of an organization's primary values and the ethical rules it expects its employees to follow.
  - A) mission statement
  - B) values statement
  - C) code of ethics
  - D) vision statement
- ( ) 13. \_\_\_\_\_ refers to innovations in products, services, or processes that radically change an industry's rules of the game for producers and consumers.
  - A) Restructuring innovation
  - B) Trickle up innovation
  - C) Productive innovation
  - D) Disruptive innovation

( ) 14. \_\_\_\_\_ refers to the horizontal expansion of a job by increasing job scope, or the number of different tasks required in a job and the frequency with which those tasks are repeated.

- A) Job enrichment
- B) Job scope
- C) Job enlargement
- D) Job depth
- ( ) 15. In communication, disturbances that interfere with the transmission, receipt, or feedback of a message are called \_\_\_\_\_.
  - A) screens
  - B) filters
  - C) distractors
  - D) noise

 ( ) 16. According to the Ohio State studies, the \_\_\_\_\_\_ dimension of leader behavior is defined as the extent to which a leader has job relationships characterized by mutual trust and respect for group members' ideas and feelings.

- A) relationship management
- B) consideration
- C) people orientation
- D) integrity

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- ( ) 17. The \_\_\_\_\_ method utilizes feedback from supervisors, employees, and coworkers.
  - A) multiperson comparison
  - B) 360-degree appraisal
  - C) critical incident
  - D) graphic rating scale
- ( ) 18. Effective team leaders, in most cases, act as \_\_\_\_\_.
  - A) autocrats
  - B) regulators
  - C) controllers
  - D) facilitators

( ) 19. The degree to which an employee identifies with a particular organization and its goals and wishes to maintain membership in the organization is the employee's \_\_\_\_\_.

- A) job involvement
- B) organizational commitment
- C) job satisfaction
- D) organizational citizenship
- ( ) 20. If you believe that you control your own destiny, which of the following personality traits are you likely to possess?
  - A) external locus of control
  - B) risk aversion
  - C) high self-esteem
  - D) internal locus of control
- () 21. A matrix structure violates which important element of organizational design?
  - A) unity of command
  - B) span of control
  - C) chain of command
  - D) decentralization
- ( ) 22. Retained earnings are part of \_\_\_\_\_ control of an organization.
  - A) structural
  - B) financial
  - C) operating
  - D) interim

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) 23. If the components of an organization's environment change frequently, the organization is ( operating in a \_\_\_\_\_\_ environment. A) stable B) simple C) dynamic D) complex ) 24. The path-goal theory is a(n) \_\_\_\_\_ model of leadership that extracts key elements from ( the expectancy theory of motivation. A) fixed B) alternative C) contingency D) untested ) 25. Using the BCG matrix, SBUs are classified on the basis of ( A) market growth rate and cash generation potential. B) market share and market growth rate. C) competitive advantage and financial strength. D) a strategic business unit and product life cycle. ) 26. The major difference between wages and salary is ( A) salaries are higher than wages. B) salaries include benefits while wages do not. C) low-level employees earn salaries while managers receive wages. D) wages are based on hours worked while salary is based on contribution to the firm. ) 27. Taiwan charges taxes on Japanese fruits that are sold in Taiwan. This is ( A) a joint venture. B) licensing. C) an export tariff. D) an import tariff. ) 28. \_\_\_\_\_\_ is the set of forces that cause people to behave in certain ways. ( A) Motivation B) Perception C) Personality D) Compensation

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- ( ) 29. \_\_\_\_\_ is the search for the best practices among competitors or noncompetitors that lead to their superior performance.
  - A) Factor analysis
  - B) Total quality management
  - C) Market positioning
  - D) Benchmarking

( ) 30. According to Maslow's hierarchy of needs theory, \_\_\_\_\_\_ needs are predominantly satisfied externally while \_\_\_\_\_\_ needs are satisfied internally.

- A) physiological; safety
- B) safety; self-actualization
- C) self-actualization; physiological
- D) social; safety

## **II. Essay Questions**

1. Please briefly describe the framework of the Balanced Scorecard. If you were a manager of a service industry, how will you apply the Balanced Scorecard system in your workplace? (20 points)

(Hint: You may develop your answer within a specific task or a project.)

2. An entrepreneur has a new concept for a restaurant chain. The entrepreneur must decide whether to build the chain of restaurants or to offer franchises to independent owners. What are some of the factors that enter into the entrepreneur's choice between the two alternatives? (20 points)