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Total Pages : 79

ENTRANCE EXAMINATION, 2012

M.A. ECONOMICS

[Field of Study Code : ECOM (216)]

Time Allowed : 3 hours *Maximum Marks* : 100

INSTRUCTIONS FOR CANDIDATES

Candidates must read carefully the following instructions before attempting the Question Paper :

(i) Write your Name and Registration Number in the space provided for the purpose on the top of this Question Paper and in the Answer Sheet.

(ii) **Please darken the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

(iii) All questions are compulsory.

(iv) Answer all the 100 questions in the Answer Sheet provided for the purpose by darkening the correct choice, i.e., (a) or (b) or (c) or (d) with a BALLPOINT PEN only against the corresponding circle. Any overwriting or alteration will be treated as wrong answer.

(v) Each correct answer carries **1** mark. **There will be negative marking and 1/4 mark will be deducted for each wrong answer.**

(vi) Answer written by the candidates inside the Question Paper will not be evaluated.

(vii) Pages at the end have been provided for Rough Work.

(viii) Return the Question Paper and Answer Sheet to the Invigilator at the end of the Entrance Examination. **DO NOT FOLD THE ANSWER SHEET.**

INSTRUCTIONS FOR MARKING ANSWERS

1. Use only Blue/Black Ballpoint Pen (do not use pencil) to darken the appropriate Circle.
2. Please darken the whole Circle.
3. Darken ONLY ONE CIRCLE for each question as shown in example below :

Wrong	Wrong	Wrong	Wrong	Correct
● ⓑ ⓒ ●	Ⓐ ⓑ ⓒ ⓓ	Ⓐ ⓑ ⓒ Ⓓ	◉ ⓑ ⓒ ●	ⓐ ⓑ ⓒ ●

4. Once marked, no change in the answer is allowed.
5. Please do not make any stray marks on the Answer Sheet.
6. Do rough work only on the pages provided for this purpose.
7. Mark your answer only in the appropriate space against the number corresponding to the question.
8. **Ensure that you have darkened the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

1/30

73x34½" H.B.

1. If the population of a country increases by 20 percent in 10 years, the annual exponential growth rate of the population is

   (a) 2%

   (b) more than 2%

   (c) less than 2%

   (d) None of the above

2. In regression analysis, a standardized variable

   (a) has a mean of 0 and a standard deviation of 1

   (b) is always normally distributed

   (c) has a bell-shaped distribution

   (d) None of the above

3. Consider the following null and alternative hypotheses :

$$H_0 : \pi = 0 \cdot 16$$

$$H_1 : \pi > 0 \cdot 16$$

   The above setup

   (a) indicates a one-tailed test with a rejection area in the right tail

   (b) indicates a one-tailed test with a rejection area in the left tail

   (c) indicates a two-tailed test with an acceptance region in the right tail

   (d) indicates a two-tailed test with a rejection area in the right tail

4. Suppose the penalty imposed for premature withdrawal of a time deposit from any bank in an economy increases from 1% to 2·5% of the amount of the deposit. Everything else remaining constant, what will happen to the transactions demand for money in the economy?

   (a) Remain unchanged

   (b) Increase

   (c) Decrease

   (d) Cannot be determined

5. In which of the following cases would the purchase of rice be included in our calculation when we calculate the GDP of India from the expenditure side?

(a) A resident Indian purchases rice to make a dosa which he sells to his neighbour. He then pockets the money received

(b) A resident Indian purchases rice to make a dosa which he sells to his neighbour. He donates the money received to a charity

(c) A foreign citizen visiting India purchases rice to make a dosa which he sells to another foreign citizen visiting India

(d) A non-resident Indian visiting India purchases rice, goes back to his country of residence, makes a dosa and then sells it to his neighbour

6. If three corners of a parallelogram are (1, 1), (4, 2) and (1, 3), then the fourth corner is

(a) (4, 4)

(b) (4, 0)

(c) (–2, 2)

(d) (4, 4) or (4, 0) or (–2, 2)

Question Nos. **7–10** are to be answered on the basis of the following information :

Consider a cube having (0, 0, 0), (1, 0, 0), (0, 1, 0) and (0, 0, 1) as four of its corners.

7. Which of the following is true?

(a) The other corners are (1, 1, 0), (1, 0, 1), (0, 1, 1) and (1, 1, 1)

(b) The other corners are (–1, –1, 0), (–1, 0, –1), (0, –1, –1) and (–1, –1, –1)

(c) The other corners are $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$ and (1, 1, 1)

(d) The other corners of the cube cannot be determined

8. Which of the following is true?

(a) $(\frac{1}{4}, \frac{1}{4}, \frac{1}{4})$ is the centre of the given cube

(b) $(\frac{1}{8}, \frac{1}{8}, \frac{1}{8})$ is the centre of the given cube

(c) The centre of the cube cannot be determined

(d) None of the above

9. Which of the following is true?

(a) The volume of the cube is 1

(b) The volume of the cube is 6

(c) The volume of the cube is 8

(d) None of the above

10. Which of the following is true?

(a) The area of the cube is 1

(b) The area of the cube is 6

(c) The area of the cube is 8

(d) The area of the cube cannot be determined

Question Nos. **11–14** are to be answered on the basis of the following information :

A random variable Y has the following distribution :

Y	–1	0	1	2
$P(Y)$	$3C$	$2C$	0·4	0·1

11. The value of the constant C is

(a) 0·10

(b) 0·15

(c) 0·20

(d) None of the above

12. The expected value of Y^2 is

(a) 0·90 (b) 0·80

(c) 1·50 (d) 1·10

13. Consider the random variable $2 \times Y + r^2$, where r is a real number. The mean of this random variable is 0·7. Which of the following must be true?

(a) $r = 0 \cdot 10$

(b) $r = 0 \cdot 05$

(c) $r^2 = 0 \cdot 40$

(d) None of the above

14. The variance of the random variable $4 \times Y$ is

(a) 4·04

(b) 1·01

(c) 16·16

(d) None of the above

15. Assume that country *A* is relatively abundant in labour and country *B* is relatively abundant in land. Note that wages are the returns to labour and rents are the returns to land. According to the factor price equalization theorem, once country *A* begins specializing according to comparative advantage and trading with country *B*

(a) wages and rents should fall in country *A*

(b) wages and rents should rise in country *A*

(c) wages should rise and rents should fall in country *A*

(d) wages should fall and rents should rise in country *A*

Question Nos. **16–18** are to be answered on the basis of the following information :

The table below shows the domestic demand and supply conditions for computers in a small country, Norway, in the world computer market :

Price (in $)	*Demand*	*Supply*
1000	3200	800
1500	2800	1200
2000	2400	1600
2500	2000	2000
3000	1600	2400
3500	1200	2800

16. In the absence of trade, Norway's equilibrium price and quantity equal

(a) $ 1500 and 2800 computers

(b) $ 2000 and 1600 computers

(c) $ 2500 and 2000 computers

(d) $ 3500 and 2000 computers

17. With free trade, suppose the rest of the world can supply computers at a price of \$ 1500. Norway's imports will now equal ——. Compared to what occurred in the absence of trade, Norway's consumer surplus will —— and producer surplus will ——.

(a) 1600 computers, decrease, increase

(b) 1600 computers, increase, decrease

(c) 1200 computers, decrease, increase

(d) 1200 computers, increase, decrease

18. To reduce imports, suppose the Government of Norway imposes a quota equal to 800 computers. Compared to what occurred in the absence of trade, Norway's consumer surplus will —— and producer surplus will ——.

(a) increase, increase

(b) increase, decrease

(c) decrease, increase

(d) decrease, decrease

19. Let $f(x) = (\log(x))/x$, where $0 < x < 1$. Then for all x, such that $0 < x < 1$

(a) $f'(x) < 0$

(b) $f'(x) > 0$

(c) $f'(x) > 0$, if $0 < x < 0{\cdot}5$ and $f'(x) < 0$, if $0{\cdot}5 \leq x < 1$

(d) Cannot say anything about the sign of $f'(x)$

20. Given two numbers, $a = (3\sqrt{7} + 4\sqrt{7})^2$ and $b = 343$, which of the following must be true?

(a) $a > b$

(b) $b > a$

(c) $a = b/2$

(d) $a = b$

21. Let $S = 1 + 1/2^2 + 1/3^2 + 1/4^2 + 1/5^2 + \cdots$. Which of the following is true?

(a) $S = 6$

(b) $S = 8$

(c) The sum does not converge to any finite value

(d) None of the above

Question Nos. **22–26** are to be answered on the basis of the following information :

Consider a closed economy in which aggregate output in short-run equilibrium is equal to the level of effective demand. There are only two types of expenditure on goods and services—private consumption expenditure and expenditure by the government (G). Workers earn only wage income and non-workers earn all remaining income. Non-workers always spend a fixed amount on consumption. Suppose to produce every rupee of final output, 0·005 labour-day is required and the wage for a working day is Rs 150.

22. Suppose there is no taxation in the economy. If S denotes private savings and I denotes investment expenditure in the economy, which of the following is a condition for short-run equilibrium in the economy?

(a) $S = G$

(b) $S = I$

(c) $S = 0$

(d) None of the above

23. Suppose workers consume their entire income and the only tax revenue comes from lump sum direct taxes imposed on non-workers. What is the value of the balanced budget multiplier in this economy?

(a) 1

(b) 2·5

(c) 4

(d) None of the above

24. Suppose workers consume a fraction 0·8 of their income and the only tax revenue comes from lump sum direct taxes imposed on non-workers. What is the value of the balanced budget multiplier?

(a) 1

(b) 2·5

(c) 4

(d) None of the above

25. Suppose workers consume their entire income and the lump sum direct taxes are imposed on workers rather than on non-workers. What is the value of the balanced budget multiplier?

(a) 1

(b) 2·5

(c) 4

(d) None of the above

26. Suppose workers consume a fraction 0·8 of their disposable income and the lump sum direct taxes are imposed on workers rather than on non-workers. What is the value of the balanced budget multiplier?

(a) 0·5 (b) 1

(c) 2 (d) 2·5

27. A_1, A_2 and A_3 are independent events. The probability of event A_i is p_i; $i = 1, 2, 3$. The probability of the event $\bigcup_{i=1}^{3} A_i$ is equal to

(a) $p_1 + p_2 + p_3$

(b) $1-(1-p_1)\times(1-p_2)\times(1-p_3)$

(c) $p_1 \times p_2 \times p_3$

(d) None of the above

28. A student must choose one of the subjects—Physics, Chemistry or Mathematics—for study. She is equally likely to choose Physics or Chemistry and twice as likely to choose Mathematics. The probability that the student chooses Mathematics is

(a) $\frac{1}{3}$

(b) $\frac{1}{4}$

(c) $\frac{1}{2}$

(d) None of the above

29. Linda is 31, single, outspoken, and very bright. She studied Philosophy in college. As a student, she was deeply concerned with discrimination and other social issues, and participated in anti-nuclear demonstrations. Consider the following two situations :

(i) Linda is a bank teller.

(ii) Linda is a bank teller and active in the feminist movement.

Which of the following claims must be correct?

(a) Situation (ii) is strictly more likely than situation (i)

(b) Situation (i) is strictly more likely than situation (ii)

(c) Situation (i) is at least as likely as situation (ii)

(d) None of the above

30. x and y are real numbers such that $x < y$. Which of the following claims must be correct?

(a) $x^2 < y^2$

(b) $y^2 < x^2$

(c) $x < x^2$

(d) None of the above

31. $0 \cdot 036 \times 0 \cdot 02$ is equal to

(a) 0·0072

(b) 72×10^{-5}

(c) 0·000072

(d) None of the above

Question Nos. **32–36** are to be answered on the basis of the following information :

The names of 7 students when ranked in ascending order of their weights are *A*, *B*, *C*, *D*, *E*, *F* and *G*. *A*'s weight is 45 kg and *G*'s weight is 75 kg.

32. If no pair of students has the same weight, then the median weight of the group is

(a) always equal to *C*'s weight

(b) the average of *C*'s weight and *E*'s weight

(c) *C*'s weight or *E*'s weight

(d) None of the above

33. If three students among *B*, *C*, *D*, *E* and *F* have the same weight and the remaining two have different weights, then the median weight of the group of 7 students is

(a) always equal to *C*'s weight

(b) the average of *C*'s weight and *E*'s weight

(c) *C*'s weight or *E*'s weight

(d) None of the above

34. Suppose the name of *F* is deleted from the list. Then, if the difference in weights between any two consecutively ranked students on the list is a constant positive number, the median weight is equal to

(a) *B*'s weight

(b) the average of *B*'s weight and *E*'s weight

(c) *B*'s weight or *E*'s weight

(d) None of the above

35. Suppose the name of *F* is deleted from the list and the difference in weights between any two consecutively ranked students on the list is a constant positive number. Calculate the arithmetic mean of the absolute deviations of the weights of the six students from the arithmetic mean of their weights. How many students in the list have a weight which differs from the median weight by more than this amount?

(a) 1

(b) 2

(c) 3

(d) 4

36. Suppose the name of *F* is deleted from the list and the difference in weights between any two consecutively ranked students on the list is a constant positive number. The ratio between the standard deviation of the weights of the six students and the mean absolute deviation of their weights is

(a) equal to unity

(b) less than unity

(c) greater than unity

(d) indeterminate

37. The probability of drawing two aces from a deck of 52 cards is

(a) greater with replacement than without replacement

(b) the same with replacement as without replacement

(c) less with replacement than without replacement

(d) None of the above

38. The probability of drawing two spades from a deck of 52 cards without replacement is

(a) greater than 1/16

(b) equal to 1/16

(c) less than 1/16

(d) None of the above

39. X is a positive integer satisfying the following conditions :

(i) $50 \leq X \leq 79$

(ii) If X is a multiple of 3, then $50 \leq X \leq 59$

(iii) If X is not a multiple of 4, then $60 \leq X \leq 69$

(iv) If X is not a multiple of 6, then $70 \leq X \leq 79$

Therefore, we can infer that

(a) $X = 54$

(b) $X = 65$

(c) $X = 76$

(d) None of the above

40. Three trucks A, B and C are used for transporting wheat and rice. The following information is given :

(i) If A carried wheat, then B carried rice.

(ii) If A carried rice, then C carried wheat.

(iii) If B carried wheat, then C carried rice.

Which truck always carried the same thing?

(a) A

(b) B

(c) C

(d) None of the above

41. Only one of the following three statements regarding the number of balls in an urn is true :

(i) There are at least 100 balls in the urn.

(ii) There are less than 100 balls in the urn.

(iii) There is at least one ball in the urn.

How many balls are there in the urn?

(a) 1

(b) 100

(c) 101

(d) 0

Question Nos. **42 and 43** are to be answered on the basis of the following information :

(i) Four students, named *P*, *Q*, *R* and *S* all opted for different subjects—Economics, History, Physics and Chemistry.

(ii) *Q* opted neither for Physics nor for History.

(iii) *S* opted neither for Physics nor for Chemistry.

(iv) If *Q* did not opt for Chemistry, then *R* did not opt for Physics.

(v) *P* opted neither for Physics nor for History.

42. *Q* opted for

(a) Physics
(b) Chemistry
(c) Economics
(d) History

43. Economics was opted by

(a) *P* (b) *Q*
(c) *R* (d) *S*

Question Nos. **44 and 45** are to be answered on the basis of the following information :

Three sportspersons *A*, *B* and *C* each made two statements given below :

A's statements :

(i) I do not belong to the hockey team.
(ii) Mr. *D* is on the soccer team.

B's statements :

(i) I do not belong to the soccer team.
(ii) Mr. *D* is on the cricket team.

C's statements :

(i) I do not belong to the cricket team.
(ii) Mr. *D* is on the hockey team.

Both statements made by the person who belongs to the hockey team are true; both statements made by the person who belongs to the soccer team are false; and the person who belongs to the cricket team made one true statement and one false statement.

44. Mr. *D* is on the

(a) cricket team
(b) hockey team
(c) soccer team
(d) None of the above

45. The person belonging to the cricket team is

(a) *A*

(b) *B*

(c) *C*

(d) None of the above

46. Compared to a single-price monopoly, a perfectly competitive industry produces

(a) less output and has a lower price

(b) less output and has a higher price

(c) more output and has a lower price

(d) None of the above

47. A 95% confidence interval for a population mean will be —— a 99% confidence interval for the same population mean. (Both calculations are based on the same set of data.)

(a) longer than

(b) shorter than

(c) the same length as

(d) None of the above

48. The equilibrium rent for four-bedroom apartments is Rs 1,500 per month. If the city government imposes a price ceiling of Rs 1,600 per month on rents, which of the following will happen?

(a) There will be excess demand for four-bedroom apartments

(b) There will be excess supply of four-bedroom apartments

(c) The government will earn Rs 100 per month from each four-bedroom apartment that is rented

(d) None of the above

49. Continue the following number series with the group of numbers below which best continues the series :

1 10 3 9 5 8 7 7 9 6

(a) 11 5

(b) 10 5

(c) 10 4

(d) 11 6

50. If two typists can type 2 pages in 2 minutes, how many typists will it take to type 18 pages in 6 minutes?

(a) 4 (b) 6

(c) 12 (d) 36

51. If you count from 1 to 100, how many 7s will you pass on the way?

(a) 11 (b) 19

(c) 20 (d) 21

52. Four years ago, Arka was twice as old as Saina. Four years on from now, Saina will be $\frac{3}{4}$ of Arka's age. How old is Arka now?

(a) 10 years (b) 12 years

(c) 8 years (d) 16 years

53. Which number comes next in the following series of numbers?

2 3 5 7 11 13

(a) 14 (b) 15

(c) 16 (d) 17

54. Two men, starting at the same point, walk in opposite directions for 4 meters, turn left and walk another 3 meters. What is the distance between them?

(a) 2 meters (b) 6 meters

(c) 10 meters (d) 14 meters

55. In a lake, there is a patch of lily pads. Everyday, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake?

(a) 24 days

(b) 12 days

(c) Cannot be determined from the statement of the problem

(d) None of the above

Question Nos. **56–58** are to be answered on the basis of the following information :

In a two-good world, there is an individual with income $m = 3$ and utility function is given by $u(x, y) = x^{0.5}y^{0.5}$. The price of good x is 1 per unit and the price of good y is also 1 per unit.

56. If the individual can consume any non-negative amount of goods x and y, then the optimum consumption bundle is

(a) $x = 1,\ y = 1$

(b) $x = 1{\cdot}5,\ y = 1{\cdot}5$

(c) $x = 2{\cdot}5,\ y = 0{\cdot}5$

(d) $x = 0,\ y = 3$

57. If the individual can consume either zero unit of good x or at most one unit of x and any non-negative amount of good y, then the optimum consumption bundle is

(a) $x = 1,\ y = 2$

(b) $x = 1,\ y = 3$

(c) $x = 0,\ y = 3$

(d) $x = 3,\ y = 0$

58. If both goods x and y can be consumed only in integer amounts (i.e., zero unit, one unit, two units, etc.), then the optimum consumption bundle is

(a) $x = 3,\ y = 1$

(b) $x = 1,\ y = 3$

(c) $x = 3,\ y = 0$

(d) either $x = 2,\ y = 1$ or $x = 1,\ y = 2$

Question Nos. **59–61** are to be answered on the basis of the following information :

A firm produces a certain good and has two plants. To produce y_1 units of the good in plant 1, the total cost for the firm is $c_1(y_1) = y_1 \times y_1$. To produce y_2 units of the good in plant 2, the total cost for the firm is $c_2(y_2) = y_2 \times y_2$.

59. Suppose the firm produces output y at minimum cost. Which of the following is true?

(a) All of the output is produced in one of the two plants

(b) Output $y/2$ is produced in plant 1 and output $y/2$ is produced in plant 2

(c) All divisions of output y between the two plants result in the same cost for the firm

(d) None of the above

60. Each unit of good produced by the firm is sold at price equal to 3. The profit-maximizing output of the firm is

(a) 3

(b) 0

(c) 6

(d) The profit maximization problem does not have a solution

61. Each unit of good produced by the firm is sold at price equal to 3. The profit level of the profit-maximizing firm is

(a) 9

(b) 0

(c) The profit maximization problem does not have a solution

(d) None of the above

62. Which of the following represents the same preferences as

$U(x_1, x_2) = \min\{x_1, x_2\} + \max\{x_1, x_2\}$

where $x_1, x_2 \geq 0$?

(a) $x_1 + x_2$

(b) $x_1 \times x_2$

(c) $\max\{x_1, x_2\}$

(d) None of the above

63. Let f be a twice differentiable real-valued function defined on the set of all real numbers greater than or equal to 0 and less than or equal to 1. Suppose f attains the maximum value in its domain at x^*. Which of the following must be true?

(a) $f'(x^*) = 0$

(b) $f''(x^*) < 0$

(c) $x^* = 0$ or $x^* = 1$ or $f'(x^*) = 0$

(d) None of the above

Question Nos. **64–66** are to be answered on the basis of the following information :

A relation f from set X to set Z is a function if and only if for every element x in X there is a unique element z in Z such that x and z are associated through f. X is called the domain of f and Z the codomain of f. The range of f is the set of all elements in the codomain which are associated with at least one element in the domain.

f is a surjective function if and only if every element in the codomain has an association in the domain. f is an injective function if and only if no two distinct elements in the domain are associated with the same element in the codomain.

Consider the following statements :

(i) There exists an element x in the domain of f such that no element in the codomain is associated with it.

(ii) There exists an element x in the domain of f and two distinct elements z and w in the codomain of f such that both z and w are associated with x.

64. Which of the following is true?

(a) To prove that f is not a function, it is necessary to demonstrate (i)

(b) To prove that f is not a function, it is necessary to demonstrate (ii)

(c) To prove that f is not a function, it is necessary to demonstrate (i) or (ii)

(d) None of the above

65. Which of the following is true?

(a) Demonstration of (i) is sufficient to prove that f is not a function but demonstration of (ii) is not sufficient to prove that f is not a function

(b) Demonstration of (ii) is sufficient to prove that f is not a function but demonstration of (i) is not sufficient to prove that f is not a function

(c) Demonstration of (i) and (ii) is sufficient to prove that f is not a function

(d) None of the above

66. Which of the following is true?

(a) The range of a surjective function is always equal to its codomain

(b) The range of a surjective function is never equal to its codomain

(c) The range of a surjective function is equal to its codomain only if it is injective also

(d) One of the conditions under which the range of a surjective function is equal to its codomain is that the function is injective also

Question Nos. **67–69** are to be answered on the basis of the following information :

A firm uses labour to produce a certain good. If x units of labour are used by the firm, the output of the good equals $f(x) = 20x - x^2$. Each unit of the good sells at a price of 1. Let w denote the price of each unit of labour. We must have $x \geq 0$. Assume that the firm hires labour to maximize profits.

67. What is the minimum w for which it is optimal for the firm to hire zero unit of labour?

(a) 0

(b) 10

(c) 15

(d) None of the above

68. For what value of w is it optimal for the firm to hire 10 units of labour?

(a) 0

(b) 20

(c) 10

(d) None of the above

69. Assume that $w = 16$. Then the profits of the firm equal

(a) 2

(b) 36

(c) 4

(d) None of the above

Question Nos. **70–75** are to be answered on the basis of the following information :

Ms. Chi can repay a loan taken from Mr. Tao either by giving him u kg of gold today or by giving him v kg of gold after two years. The price of gold today is Rs x per gram. Ms. Chi is certain that after two years the price of gold will be Rs y per gram. If Ms. Chi chooses to repay the loan after two years, she will open a fixed deposit account at her bank today with a maturity period of two years and use the proceeds at maturity to purchase the necessary gold. Interest on such a deposit is compounded annually and is paid on the date of maturity. The rate of interest for a two-year fixed deposit is r percent per annum. Every year the interest paid into Ms. Chi's fixed deposit account will be taxed at the rate of t percent. Ms. Chi will decide when to repay the loan on the basis of which option will cost her the least amount of money today.

70. If $u = v = 0 \cdot 16$, $x = 2000$, $y = 2500$, $r = 12 \cdot 5$, $t = 0$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

71. If $u = v$, $x = 2000$, $y = 2500$, $r = 12$, $t = 0$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

72. If $u = v$, $x = 2000$, $y = 2500$, $r = 12 \cdot 5$, $t = 0 \cdot 04$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

73. If $u = 0 \cdot 16$, $v = 0 \cdot 165$, $x = 2000$, $y = 2500$, $r = 12 \cdot 5$, $t = 0$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

74. If $u = 0 \cdot 16$, $v = 0 \cdot 165$, $x = 2000$, $y = 2500$, $r = 12$, $t = 0$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

75. If $u = 0 \cdot 16$, $v = 0 \cdot 165$, $x = 2000$, $y = 2500$, $r = 12$, $t = 0 \cdot 04$, when will Ms. Chi repay the loan?

(a) Today

(b) After two years

(c) She will be indifferent between (a) and (b)

(d) More information is necessary to provide the answer

Question Nos. **76–79** are to be answered on the basis of the following information :

Consider the following tabulated data for an economy and answer the questions that follow :

Year	*GDP at current prices*	*GDP at constant prices*
1975	21	17
1980	26	21
1985	32	26
1990	39	32
1995	47	39

76. In which period did the economy have the highest rate of growth of real GDP?

(a) 1975–80

(b) 1980–85

(c) 1985–90

(d) 1990–95

77. In which period did the economy have the lowest rate of growth of real GDP?

(a) 1975–80

(b) 1980–85

(c) 1985–90

(d) 1990–95

78. If the GDP deflator is taken as the price index for the economy, in how many of the periods 1975–80, 1980–85, 1985–90 and 1990–95 did the economy experience deflation?

(a) 1 (b) 2

(c) 3 (d) 4

79. If the GDP deflator is taken as the price index for the economy, in how many of the periods 1975–80, 1980–85, 1985–90 and 1990–95 did the economy experience inflation?

(a) 1 (b) 2

(c) 3 (d) 4

80. In a two-good world, a consumer's preferences over commodities 1 and 2 can be represented by the utility function $U(x_1, x_2) = v(x_1) + x_2$, where $x_1, x_2 \geq 0$. The consumer's income is known to be very high. Then, the demand for good 1 displays which of the following?

(a) The substitution effect is negative and the income effect is positive

(b) The substitution effect is positive and the income effect is negative

(c) The substitution effect is zero and the income effect is positive

(d) The substitution effect is negative and there are no income effects

81. In a two-good world, suppose that the price of one good decreases. Which of the following holds true?

(a) The Slutsky equation says that the total change in demand is exactly equal to the sum of the substitution effect and the income effect

(b) The Slutsky equation says that the total change in demand is less than the sum of the substitution effect and the income effect

(c) The Slutsky equation says that the total change in demand is more than the sum of the substitution effect and the income effect

(d) The Slutsky equation does not deal with income effects at all

Question Nos. **82–87** are to be answered on the basis of the following information :

Suppose a consumer's preferences over commodities 1 and 2 can be represented by the utility function $U(x_1, x_2) = \min\{x_1, x_2\}$, where $x_1, x_2 \geq 0$. The prices of the two commodities are 1 and 2 respectively and the consumer's income is 150.

82. The utility function of the consumer is

(a) continuous at all points in the domain but not differentiable at all points in the domain

(b) not continuous at all points in the domain

(c) differentiable at all points in the domain

(d) None of the above

83. Which of the following is true?

(a) At the optimum, the consumer should consume 150 units of commodity 1 and none of commodity 2

(b) At the optimum, the consumer should consume 75 units of commodity 2 and none of commodity 1

(c) At the optimum, the consumer should consume 50 units of commodity 1 and 50 units of commodity 2

(d) At the optimum, the consumer should spend equal amounts on the two commodities

84. If the income of the consumer increases by 1 unit, then

(a) the optimum consumption of commodity 1 increases by $\frac{1}{3}$ and the optimum consumption of commodity 2 increases by $\frac{1}{3}$

(b) the optimum consumption of commodity 1 increases by $\frac{1}{3}$ and the optimum consumption of commodity 2 increases by $\frac{2}{3}$

(c) the optimum consumption of commodity 1 increases by $\frac{1}{2}$ and the optimum consumption of commodity 2 increases by $\frac{1}{2}$

(d) None of the above

85. Suppose the price of commodity 2 reduces to 1 while the price of the other commodity and the consumer's income remain unchanged. The substitution effect according to Slutsky of this price change on the optimal amount of commodity 1 is

(a) –1

(b) 25

(c) –25

(d) 0

86. Suppose the price of commodity 2 reduces to 1 while the price of the other commodity and the consumer's income remain unchanged. The income effect according to Slutsky of this price change on the optimal amount of commodity 1 is

(a) 0

(b) 25

(c) –25

(d) –1

87. The equation of the income expansion path for the consumer is

(a) $x_1 + 2x_2 = 150$

(b) $x_1 = 2x_2$

(c) $x_1 = x_2$

(d) None of the above

Question Nos. **88–92** are to be answered on the basis of the following information :

In a village, there is a field. If n cows simultaneously graze on this field, the value of milk produced by each cow is $v(n)$:

$v(1)$	$v(2)$	$v(3)$	$v(4)$	$v(5)$	$v(6)$	$v(7)$
22	18	15	12	10	9	8

Assume that the market price of a cow is Rs 11.

88. Suppose all villagers are given free access to the field. This means that any villager can buy as many cows as she wants, graze her cows on the field, and sell the milk obtained from her cows. In equilibrium, the total number of cows bought by villagers and grazed on the field equals

(a) 4

(b) 5

(c) 7

(d) None of the above

89. Define the aggregate income of the village as follows :

Total value of milk produced by cows grazed on the field – Total cost of buying the cows.

How many cows must graze the field for the village's aggregate income to be maximized?

(a) 1

(b) 2

(c) 3

(d) None of the above

90. If villagers are given free access to the field, the aggregate income of the village, in equilibrium, equals

(a) 0

(b) 48

(c) 4

(d) None of the above

91. Assume that the villagers implement the following rule :

Each time a person buys a cow, she must pay Rs t to the village council. Thus, a person incurs a cost of Rs 11 + t for each cow that she buys.

For which of the following values of t will the equilibrium number of cows bought and grazed on the field equal the number that maximizes the village's aggregate income?

(a) 11

(b) 6

(c) 0

(d) None of the above

92. Suppose t is set to 10. The revenue earned by the village council equals

(a) Rs 10 (b) Rs 20

(c) Rs 30 (d) Rs 0

93. The function $f(x)$ approaches infinity as x approaches infinity and the limit of the derivative of the function $f(x)$ is 0 as x approaches infinity. What is the limit of $f(x)/x$ as x approaches infinity?

(a) Infinity

(b) 0

(c) 1

(d) Cannot be determined

94. On which of the following intervals is the function $x/(x^2 - 1)$ continuous?

(a) $(-1, \infty)$

(b) $(-\infty, 1)$

(c) $[-1, 1]$

(d) None of the above

95. What is the value of the derivative of the function $(2x + 1)/(2x - 4)$ at $x = 1$?

(a) -4

(b) -2

(c) 2

(d) None of the above

96. Suppose $f(x) = a_1 x + a_2 + (a_3 / x)$, where a_1, a_2 and a_3 are positive constants and x is assumed to take only positive values. Which of the following statements is true?

(a) $f(x)$ has a minimum value but no maximum value

(b) $f(x)$ has a maximum value but no minimum value

(c) $f(x)$ has neither a minimum value nor a maximum value

(d) $f(x)$ has both a minimum value and a maximum value

97. If $z = e^{f(x, y)}$, where $f(x, y) = x^2 + y^2$, what is the elasticity of z with respect to x at $(x, y) = (1, 2)$?

(a) 1

(b) 2

(c) 4

(d) None of the above

Question Nos. **98–100** are to be answered on the basis of the following paragraph from the Economic Survey, 2010 :

India is a country which will be severely impacted by climate change. This puts additional hurdles in its developmental path in addition to the challenges of poverty eradication and growing population. The projected impacts of climate change cut across various sectors, natural system such as coastal areas, water resources, forests, agriculture and health. With a large agrarian population, India is vulnerable to changes in weather parameters. Further, rainfall variability and melting of glaciers will impact replenishment of rivers, thereby affecting availability of water in river basins and watersheds. In India, most of the rivers flowing in the northern regions are dependent on snow and glacial melt; thus climate change threatens the perennial nature of these rivers. This has huge implications for agriculture and allied activities and resultant livelihoods. This is a serious concern for an economy that is tied to its natural resources base along its developmental path.

98. The primary issue dealt with in this paragraph is

(a) population growth

(b) climate change

(c) agriculture

(d) glaciers

99. It is argued in the paragraph that climate change will by itself

(a) increase poverty

(b) make no difference to poverty in India

(c) put hurdles in the way of poverty eradication

(d) reduce inequalities in society

100. It is argued in the paragraph that climate change is a serious concern for an economy that is tied to its natural resources base because

(a) large agrarian population

(b) India's long coastline

(c) lots of glaciers in the mountains

(d) None of the above

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ENTRANCE EXAMINATION, 2011

M.A. ECONOMICS

[Field of Study Code : ECOM (216)]

Time Allowed : 3 hours *Maximum Marks* : 100

INSTRUCTIONS FOR CANDIDATES

Candidates must read carefully the following instructions before attempting the Question Paper :

(i) Write your Name and Registration Number in the space provided for the purpose on the top of this Question Paper and in the Answer Sheet.

(ii) **Please darken the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

(iii) All questions are compulsory.

(iv) Answer all the 100 questions in the Answer Sheet provided for the purpose by darkening the correct choice, i.e., (a) or (b) or (c) or (d) with a BALLPOINT PEN only against the corresponding circle. Any overwriting or alteration will be treated as wrong answer.

(v) Each correct answer carries 1 mark. **There will be negative marking and 1/4 mark will be deducted for each wrong answer.**

(vi) Answer written by the candidates inside the Question Paper will not be evaluated.

(vii) Pages at the end have been provided for Rough Work.

(viii) Return the Question Paper and Answer Sheet to the Invigilator at the end of the Entrance Examination. **DO NOT FOLD THE ANSWER SHEET.**

INSTRUCTIONS FOR MARKING ANSWERS

1. Use only Blue/Black Ballpoint Pen (do not use pencil) to darken the appropriate Circle.
2. Please darken the whole Circle.
3. Darken ONLY ONE CIRCLE for each question as shown in example below :

Wrong	Wrong	Wrong	Wrong	Correct
● ⓑ ⓒ ●	ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ●	ⓐ ⓑ ⓒ ⓓ

4. Once marked, no change in the answer is allowed.
5. Please do not make any stray marks on the Answer Sheet.
6. Do rough work only on the pages provided for this purpose.
7. Mark your answer only in the appropriate space against the number corresponding to the question.
8. **Ensure that you have darkened the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

1. Suppose two fair, six-sided, dice are rolled. The probability of obtaining a value from the first dice that is at least two greater than the value from the second dice is

   (a) $\frac{1}{6}$

   (b) $\frac{9}{12}$

   (c) $\frac{5}{18}$

   (d) $\frac{1}{18}$

2. If the radius of a circle is increased by 20%, then the area is increased by

   (a) 44%

   (b) 120%

   (c) 144%

   (d) 40%

3. Let x, y and z be distinct integers. x and y are odd and positive, and z is even and positive. Which one of the following statements cannot be true?

   (a) $(x-z)^2 y$ is even

   (b) $(x-z)y^2$ is odd

   (c) $(x-z)y$ is odd

   (d) $(x-y)^2 z$ is even

4. A line that is 13 units long has (4, 1) as one of the endpoints. Which of the following could be the other endpoint?

   (a) (-1, 13)

   (b) (9, 14)

   (c) (3, 7)

   (d) (5, 12)

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5. If p and q are the roots of the equation $x^2 - bx + c = 0$, then what is the equation if the roots are $(pq + p + q)$ and $(pq - p - q)$?

(a) $x^2 - 2cx + (c^2 - b^2) = 0$

(b) $x^2 - 2bx + (c^2 + b^2) = 0$

(c) $bcx^2 - 2(b + c)x + c^2 = 0$

(d) $x^2 + 2bx - (c^2 - b^2) = 0$

6. The domain of the function $f(x) = \frac{5}{\sqrt{x+7}}$ is

(a) $(-7, \infty)$

(b) $[-7, \infty)$

(c) $(-\infty, \infty)$

(d) $(-\infty, -7) \cup (-7, \infty)$

7. Suppose we know that $|a| < 3$. Which of the following conditions is enough to imply that $|b| < 5$?

(a) $|a + b| < 8$

(b) $2 < |a - b| < 8$

(c) $|a - b| \leq 2$

(d) $3 < |a - b| < 5$

8. A population consists of the following seven numbers :

2003; 1999; 2001; 1997; 2000; 2005; 1995

The variance of the population is

(a) 11·6

(b) 10

(c) 2010

(d) None of the above

9. Suppose a person's utility function is given by $u(x, y)$. If good x and good y are perfect substitutes, then the indifference curves are

(a) straight lines

(b) L-shaped

(c) U-shaped

(d) None of the above

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10. If $f(x) = \frac{1}{x^2}$ is integrated over the interval [1, 2], then one gets

(a) 0

(b) log 2

(c) $\frac{1}{2}$

(d) 1

11. Consider an economy wherein equilibrium level of aggregate income (Y) is the sum of aggregate investment expenditure (I) and aggregate consumption expenditure (C). For values of $Y \leq 1500$, $C = 200 + 0 \cdot 6Y$ and any amount of aggregate income in excess of 1500 currency units is entirely saved in the economy. If the full employment level of $Y = 1750$, the minimum value of I necessary to ensure full employment in the economy is

(a) 500

(b) 550

(c) 600

(d) None of the above

Question Nos. **12–15** are to be answered on the basis of the following information :

Consider an economy in which only three goods X, Y and Z are produced. X and Y are consumption goods and the output of Z in a year is used up in production of X and Y in that year. The following table gives the unit prices (p_X, p_Y and p_Z rupees respectively) and the number of units produced (q_X, q_Y and q_Z respectively) of each of the goods for three years I, II and III :

Year	p_X	q_X	p_Y	q_Y	p_Z	q_Z
I	1	2	2	5	1	2
II	1·5	3	2	6	1·5	4
III	1·5	6	3	6	2	5

12. What is the GDP (in rupees) at current prices in year II?

(a) 10·5

(b) 16·5

(c) 22·5

(d) 28·5

13. If year I is the base year, what is the GDP (in rupees) at constant prices in year III?

(a) 13

(b) 14

(c) 17

(d) 18

14. If year I is the base year, what is the value of the GDP deflator in year III?

(a) 100

(b) 130·77 (approx.)

(c) 141·67 (approx.)

(d) 150

15. What is the rate of growth of real GDP (base year I) in year III?

(a) 10%

(b) 13·67% (approx.)

(c) 18·18% (approx.)

(d) 20%

Question Nos. **16–22** are to be answered on the basis of the following information :

Let Y : aggregate real output per year, P : the price level, C : money value of aggregate consumption expenditure per year, I : money value of aggregate investment expenditure per year, L : aggregate employment (in labour hours per year), L^* : total labour supply (in labour hours per year) and w : hourly money wage rate. Let W denote the money value of aggregate wage income per year and R the money value of aggregate non-wage income per year. Consider an economy in which labour is homogeneous, the aggregate productivity of labour (Y/L) is a constant a and the price level (when output is below its full employment level) is a factor m times the wage cost per unit of aggregate output. The price at full employment is always greater than or equal to that at below full employment. In equilibrium, $PY = C + I$.

16. If $I = 4000$, $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6\,R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, what is the full employment level of output in the economy?

(a) 125

(b) 625

(c) 24000

(d) None of the above

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17. If $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, and output is below its full employment level, what is the increase in nominal income per unit increase in investment expenditure in the economy?

(a) 2

(b) 4

(c) 8

(d) 16

18. If $I = 4000$, $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, what is the price level in the economy?

(a) 0·83 (approx.)

(b) 0·93 (approx.)

(c) 1·07 (approx.)

(d) 1·16 (approx.)

19. If $I = 4000$, $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, what is the fraction of total labour supply which remains unemployed in the economy?

(a) 5%

(b) 10%

(c) 12·5%

(d) 25%

20. If $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, but I increases from 4000 to 5000, what is the resulting change in the price level in the economy?

(a) 0%

(b) 5% increase

(c) 10% increase

(d) 20% increase

21. If $C = 1000 + 0 \cdot 8\,W + 0 \cdot 6R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, but I increases from 4000 to 7000, what is the resulting change in the price level in the economy?

(a) 0%

(b) 10% increase

(c) 20% increase

(d) 50% increase

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22. If $C = 1200 + 0 \cdot 8\,W + 0 \cdot 6\,R$, $w = 10$, $m = \frac{4}{3}$, $a = 16$, $L^* = 2000$, but I increases from 4000 to 7000, what is the change in the share of non-wage income in the total income of the economy?

(a) No change

(b) Increases by $\frac{1}{8}$

(c) Increases by $\frac{1}{6}$

(d) Increases by $\frac{1}{5}$

23. Suppose in a closed economy with no government expenditure and taxation the investment function is given by $I = 2000 + 0 \cdot 1Y - 8000r$ and the saving function is given by $S = 1000 + 0 \cdot 2Y + 2000r$ (Y denotes aggregate income and r the nominal rate of interest). The economy is subject to a liquidity trap at $r = 0 \cdot 01$. What is the maximum equilibrium value of Y possible in this economy?

(a) 7800

(b) 9000

(c) 11000

(d) None of the above

Questions Nos. **24–27** are to be answered on the basis of the following information:

Suppose there is a consumer whose life is divisible into three periods which follow each other consecutively—youth, middle age and post-retirement age. The length of each period is 20 years and the consumer earns no labour income on post-retirement. In his youth the consumer earns labour income at the rate of Rs 2,500 per month. In his middle age the consumer's earnings are uncertain—there is a 25% probability that he will earn at the rate of Rs 5,000 per month, alternatively, he will earn at the rate of Rs 10,000 per month. The consumer gets to know what his rate of earnings in middle age will be at the end of his youth. Assume that the consumer expects to pay no taxes, the nominal rate of return on saving and the rate of interest is always zero and there is no inflation expected throughout his life.

24. What is the expected value of the consumer's earnings (Rs in lakh) in middle age?

(a) 18

(b) 20

(c) 30

(d) None of the above

25. What is the present discounted value of the consumer's expected lifetime labour income (Rs in lakhs)?

(a) 24

(b) 26

(c) 27

(d) 36

26. Suppose the consumer's attitude towards risk is as follows :

He prefers an alternative which promises him an amount of Rs X with probability p and an amount of Rs $Y(X > Y)$ with probability $1 - p$ to an alternative which promises him an amount of Rs Z for sure if and only if $Z < Y + (2p/3)(X - Y)$. An insurance company approaches the consumer in his youth and offers to pay Rs 7,615 per month to the consumer in his middle age in exchange for his flow of income during that period. Will the consumer accept the offer?

(a) Yes

(b) No

(c) The consumer will be indifferent between accepting and declining the offer

(d) The consumer's acceptance is a random event

27. Suppose the consumer can borrow any amount in a year but must repay the loan out of future labour income. The consumer wishes to end his life with no assets or liabilities. He plans to have the same constant flow of consumption in the last two periods of his life and wishes to minimize the difference between the expected rate of consumption in these two periods and a constant rate of consumption during his youth. What should be his savings per month (in Rs) during his youth?

(a) –750

(b) –1,250

(c) 250

(d) None of the above

28. In a bookshop, the sales of scientific books increased by 40% while the sales of engineering books decreased by 50% from 2001 to 2002. If R is the ratio of the number of scientific books to the number of engineering books in 2001 and r the same ratio in 2002, what is k if it is given by $k = r/R$?

(a) 2·8

(b) 1·25

(c) 0·2

(d) 1

29. Suppose the rate of profit is 20%, profit income is taxed at the rate of 30% and the rate of inflation is 5%. The real post-tax profit rate is

(a) 9%

(b) 10·5%

(c) –15%

(d) None of the above

30. Bread and apple are substitute goods. A sudden rise in the supply of bread will result in

(a) fall in the price of bread; and rise in the price of apple

(b) fall in the price of bread; and fall in the price of apple

(c) fall in the price of bread; and no change in the price of apple

(d) None of the above

31. The utility function of a consumer is $u = 3(x_1 + x_2)$, where x_1 is amount of good 1, and amount of good 2 respectively. Consumer's income are Re 1 and Rs 3 reapectively. Consumer's equilibrium at

(a) $x_1 = 150;\ x_2 = 50$

(b) $x_1 = 50;\ x_2 = 150$

(c) $x_1 = 0;\ x_2 = 100$

(d) $x_1 = 300;\ x_2 = 0$

32. The production function of a firm is given by quantities of output, input 1 and input 2.

(a) constant returns to scale

(b) increasing returns to scale

(c) decreasing returns to scale

(d) None of the above

Question Nos. 33–36 are to be answered from *Economic Development and the*

"Unless an appropriate relationship the terms of exchange between respond much more rapidly than between supply and demand, the the general price level. Thus in an inappropriate extent behind

income, excess demand pressure tend to appear in the agricultural product market. Whether excess demand or excess supply pressures exist in the industrial market depends on the balance between investment and saving; but, in either case, if agricultural prices are more flexible than industrial prices, then the required improvement in the terms of exchange of agriculture tends to be brought about by an absolute rise in agricultural prices, rather than by a fall in industrial prices. This is not just an immediate or short-run effect, for the rise in agricultural prices tends to generate consequential pressures on costs of production in industry, partly through a direct effect on raw material costs in industry, and partly, perhaps, through an induced effect on industrial money wages. Industrial prices may therefore be prevented from falling, even in a market where there tends to be excess supply; and indeed, if the cost pressures are substantial enough, they may even begin to rise. In this way, the improvement in agriculture's terms of exchange produces a rise in the general price level. Such a development is more likely to take place as the result of a spontaneous slowing down in the rate at which agricultural output is growing, relatively to other outputs; but it may also occur if the improvement in agriculture's terms of exchange is being produced by an acceleration in the rate of growth of industry. For opposite reasons, an acceleration in the rate of growth of agricultural output can produce a fall in the general price level."

33. According to the author, agricultural prices largely determine the behaviour of the general price level, because

(a) agricultural growth tends to lag behind industrial growth

(b) agricultural prices respond to changes in demand-supply balances faster than industrial prices

(c) an appropriate relationship exists between agriculture and industry

(d) excess demand pressures always appear in this sector

34. Excess demand in the industrial market depends upon

(a) the excess demand in agriculture

(b) whether agricultural prices are more flexible than industrial prices

(c) whether cost pressures are substantial enough

(d) the balance between saving and investment

35. The rise in agricultural prices

(a) has only a short-run effect on industrial prices

(b) increases industrial costs of production

(c) creates excess supply in industry

(d) generates a spontaneous slowing down of agricultural output

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36. An improvement in agriculture's terms of trade with industry

(a) can occur when there is a balance between investment and saving

(b) occurs when industrial prices are prevented from falling

(c) can produce a rise in the general price level

(d) is the result of substantial cost pressures in industry

37. In terms of current annual human caused greenhouse gas emissions

(a) the US is responsible for both the highest per capita and

(b) China is responsible for the highest total (but not per

(c) China is responsible for highest per capita and total

(d) the US is responsible for the highest total (but

38. Utensils worth Rs 1,500 are produced with steel
costing Rs 150. Labour cost of producing these
machinery is 0. The value added in producing these

(a) Rs 450

(b) Rs 600

(c) Rs 750

(d) None of the above

39. During the last two decades of the 20th
rate of

(a) 1·5% per annum

(b) 2·5% per annum

(c) 3·5% per annum

(d) 4·5% per annum

40. The famous book titled, *Poverty and Un-British Rule in India* was authored by

(a) W. C. Bonnerjea

(b) Dadabhai Naoroji

(c) R. C. Dutt

(d) Lala Lajpat Rai

41. An outward shift of the production possibility frontier may be caused by

(a) an increase in demand

(b) more government spending

(c) better training of employees

(d) production inefficiency

42. Let $P(n, m)$ be a property about two integers n and m. If we want to disprove the claim that 'for every integer n, there exists an integer m such that $P(n, m)$ is true', then we need to prove that

(a) there exist integers n, m such that $P(n, m)$ is false

(b) there exists an integer m such that $P(n, m)$ is false for all integers n

(c) there exists an integer n such that $P(n, m)$ is false for all integers m

(d) for every integer n, there exists an integer m such that $P(n, m)$ is false

43. Let X, Y be statements. Suppose it is known that 'X is true implies Y is true', and 'X is false implies Y is true'. If we know that Y is false, then we can conclude that

(a) both X and Y are true

(b) both X and Y are false

(c) X is true and Y is false

(d) X is false and Y is true

44. Let X, Y, Z be statements. Suppose we know that X implies Y, and that Y implies Z. If we also know that Y is false, we can conclude that

(a) X is true

(b) X is false

(c) Z is true

(d) Z is false

45. Suppose one wishes to prove that 'if some X are Y, then
it would suffice to show that

(a) some X are Z, and some Y are W

(b) some Z are X, and some W are Y

(c) all X are Z, and all Y are W

(d) all Z are X, and all W are Y

46. The annual average rate of employment
compared to 1980s, was approximately

(a) thrice

(b) twice

(c) same

(d) half

47. If the marginal cost of producing
3rd unit, then it follows that

(a) the average cost of
producing 3 units

(b) the average cost of
producing 3 units

(c) the average cost of
producing 3 units

(d) None of the above

48. If the absolute value of price elasticity of demand for good X is greater than one, then we must have

(a) if price increases by 1%, then the quantity demanded will decrease by less than 1%

(b) if price decreases by 1%, then the quantity demanded will increase by less than 1%

(c) if price of X increases, then the expenditure on the good will increase

(d) None of the above

49. Consider the following :

Option I : You receive Rs 112 after one year.

Option II : You receive Rs 55 after nine months and Rs 56 after one year.

Given that the market rate of interest is 12% per annum, it follows that

(a) Option I is better than Option II

(b) Option II is better than Option I

(c) Option I and Option II are equally good

(d) No conclusion can be drawn on the basis of the given information

50. Suppose Rs 1,00,000 is deposited in an account for 3 years at 11% per annum, compounded annually. How much money would be there at the end of 3 years?

(a) Rs 1,33,000

(b) Rs 1,34,331·1

(c) Rs 1,36,763·1

(d) None of the above

51. Suppose the price elasticity of demand for good X is 0·2. If the price of X rises by 2·8%, what effect will it have on the total expenditure on good X?

(a) Expenditure on X will fall by 5·6%

(b) Expenditure on X will rise by 5·6%

(c) Expenditure on X will rise by 2·8%

(d) Expenditure on X will fall by 2·8%

52. A box contains red and green balls. The number of green balls is $\frac{1}{3}$ the number of red balls. If a ball is taken randomly from the box, what is the probability that the ball is red?

(a) $\frac{2}{3}$

(b) $\frac{1}{3}$

(c) $\frac{3}{4}$

(d) None of the above

53. The probability distribution of a random variable X is given in the

X	*Probability*
0	0·24
1	0·38
2	0·20
3	0·13
4	0·05

The mean and variance of X are respectively

(a) 2; 2

(b) 2; 1·4142

(c) 1·37; 1·2731

(d) None of the above

54. In a certain country telephone numbers have
code and are the same within a given area
cannot begin with 0. How many different
area code in this country?

(a) 10^6

(b) 9^6

(c) 900000

(d) None of the above

55. Two dice are rolled. We define events E1, E2, E3 and E4 as follows :

E1 : Getting a sum equal to 10

E2 : Getting a double

E3 : Getting a sum less than 4

E4 : Getting a sum less than 7

Determine which statement is true

(a) Events E1 and E2 are mutually exclusive

(b) Events E3 and E4 are mutually exclusive

(c) Events E2 and E3 are mutually exclusive

(d) Events E1 and E4 are mutually exclusive

56. Limit of $\frac{e^x - 1}{x}$ as x approaches 0 is equal to

(a) 0

(b) 1

(c) ∞

(d) None of the above

57. If $f(x)$ and $g(x)$ are differentiable functions such that $f'(x) = 3x$ and $g'(x) = 2x^2$, then the limit $\frac{[f'(x) + g(x)] - [f(1) + g(1)]}{(x - 1)}$ as x approaches 1 is equal to

(a) 5

(b) 0

(c) 20

(d) None of the above

58. Functions $g(x)$ and $h(x)$ are given by $g(x) = x - 1$ and $h(x) = x^2 + 1$. The composite function $(g \circ h)(x)$ is given by

(a) x

(b) $|x|$

(c) $\sqrt{x}$

(d) None of the above

59. Equation $x^2 + \frac{1}{2}mx + 1 = 0$ has two distinct real solutions, if

(a) $m = 3$

(b) $m = 4$

(c) $m = 5$

(d) None of the above

60. Income distribution of most countries follows

(a) linear pattern

(b) normal distribution

(c) sinusoidal curve

(d) log-normal distribution

61. If $m > n$, which of the following is necessarily true?

(a) $m^2 > n^2$

(b) $mn > 0$

(c) $mn > -mn$

(d) None of the above

62. If x and y are any real numbers such that $0 < x < 1$ and $0 < y < 1$, which of the following is necessarily true?

(a) $x < xy/2 < y$

(b) $0 < xy < 2x$

(c) $x < xy < 2$

(d) $xy < y$

63. A number of the form 213xy, where x and y are digits, is divisible by 11 when divided by 100. The sum of all the digits of the number is 11. The digit y is

(a) 5

(b) 7

(c) 6

(d) 8

64. The graphs of the two equations $y = ax^2 + bx + c$ and $y = Ax^2 + Bx + C$, such that a and A have different signs and that the quantities $b^2 - 4ac$ and $B^2 - 4AC$ are both negative,

(a) intersect at two points

(b) intersect at one point

(c) do not intersect

(d) None of the above

65. Three solutions of the equation $f(x) = 0$ are -2, 0 and 3. Therefore, the three solutions of the equation $f(x-2) = 0$ are

(a) -4, -2 and 1

(b) -2, 0 and 3

(c) 4, 2 and 5

(d) 0, 2 and 5

66. If $1 \cdot 56^x = 2$, then $x =$

(a) $\log 1 \cdot 56 / \log 2$

(b) $\log 2 / \log 1 \cdot 56$

(c) $2 / \log 1 \cdot 56$

(d) $\log 2 / 1 \cdot 56$

67. If $\log_{10}(x-y) = 3$ and $\log_{10}(x+y) = 4$, then $x =$

(a) 3·5

(b) 1000

(c) 5500

(d) 1095

69. Four dice are thrown. What is the probability that the same number appears on each of them?

(a) $\frac{1}{36}$

(b) $\frac{1}{18}$

(c) $\frac{1}{216}$

(d) None of the above

70. If $f(x) = -e^x - 2$, then the range of f is given by the

(a) $(-\infty, -2)$

(b) $(-\infty, +\infty)$

(c) $(-2, +\infty)$

(d) $(-\infty, +2)$

71. The mean of a data set is equal to 10 [illegible] add 5 to each data value; then the

(a) mean = 15, standard deviation [illegible]

(b) mean = 10, standard deviation [illegible]

(c) mean = 15, standard deviation [illegible]

(d) mean = 10, standard deviation [illegible]

72. The sum

$$\sum_{k=1}^{100} (3 + [illegible])$$

(a) 5053

(b) 5050

(c) 300

(d) 5350

73. How many 4-digit numbers [illegible]

(a) 5040

(b) 3024

(c) 4536

(d) None of the above

74. How many of the 4-digit numbers can be formed, if no digit is used more than once, which are divisible by 5?

(a) 1008

(b) 952

(c) 896

(d) None of the above

Question Nos. 75–78 are to be answered on the basis of the following :

The following table shows the marginal cost of producing nth ($n = 1, 2, \cdots, 10$) unit of output by a competitive firm :

Output	*Marginal Cost*
1	1·0
2	1·3
3	1·7
4	2·3
5	3·0
6	3·9
7	5·0
8	6·5
9	8·2
10	10·0

It is also given that the total cost of producing 3 units of output is 7.

75. The total cost of producing 5 units of output (correct up to two decimal places) is

(a) 15·00

(b) 9·30

(c) 12·30

(d) None of the above

76. The average variable cost of producing 7 units of output (correct up to two decimal places) is

(a) 2·50

(b) 0·71

(c) 3·05

(d) None of the above

77. The average cost of producing 9 units of output (correct up to two decimal places) is

(a) 3·66

(b) 3·99

(c) 0·91

(d) None of the above

78. The profit-maximizing number of units of output for the firm, if the [illegible] the good is 6, is

(a) 4

(b) 7

(c) 10

(d) None of the above

79. Suppose there are 3 alternatives x, y and z, and [illegible]
The individuals' rankings (orderings) of the three [illegible]

$R_1 : (xy)z$

$R_2 : yzx$

$R_3 : z(xy)$

$R_4 : (xy)z$

(*Notation* : Alternatives inside the [illegible] alternative is written to the left of [illegible] the latter.)

Then the set of Pareto-optimal alternatives [illegible]

(a) $\{x \cdot y\}$

(b) $\{x \cdot z\}$

(c) $\{y, z\}$

(d) None of the above

80. With a positive externality

(a) there is underconsumption in the free [illegible]

(b) there is overconsumption in the free [illegible]

(c) the government may tax to [illegible]

(d) society could be [illegible]

13/FM

81. A circle of area A passes through the points (8, 0) and (0, 6). Then we must have

(a) $A < 25\pi$

(b) $A \geq 25\pi$

(c) $A = 100\pi$

(d) None of the above

82. For what value(s) of the parameter m does the equation $-2x^2 + mx = 2$ have one solution only?

(a) 0

(b) $-2, 2$

(c) $-1, 1$

(d) $-4, 4$

83. The Cash Reserve Ratio refers to

(a) the liquid cash that banks have to maintain with the Reserve Bank of India as a certain percentage of their demand and time deposits

(b) the cash that banks have to keep in their vaults in order to meet sudden demand from depositors in times of crisis

(c) the cash that households have to keep in reserve to meet sudden increases in the price of essential goods and services

(d) the cash that the government has in reserve so as to be ready to meet unexpected emergencies

84. The probability that Mr. A will be fined for illegal parking in the central market is $\frac{1}{3}$. During the last three years, he has parked his car in the market everyday but has not been booked. Today, on the 1st day of the year, he has decided to park illegally. The probability that he will be booked today is

(a) greater than $\frac{1}{3}$

(b) less than $\frac{1}{3}$

(c) equal to $\frac{1}{3}$

(d) There is insufficient information to make the required inference

85. The primary deficit refers to

(a) the deficit in the primary sector of the economy

(b) the deficit in the revenue account of the budget

(c) the deficit in the capital account of the budget

(d) the fiscal deficit less the interest outgo in the budget

86. The money multiplier in an economy increases with

(a) increase in Cash Reserve Ratio

(b) increase in Statutory Liquidity Ratio

(c) increase in banking habit of the population

(d) increase in the population of the country

Question Nos. **87** and **88** are to be answered on the

The market for a good consists of 100 buyers and 50 sellers. The supply function, which is given by

Supply = 0 if price ≤ 10

$= p - 10$ if price > 10

Each buyer has the same demand function

Demand = 0 if price ≥ 20

$= 20 - p$ if price < 20

87. Market demand function is

(a) Market demand = 2000 – 100p

(b) Market demand = 2000 – 100p, if p

(c) Market demand = 2000 – 100p, if p

(d) None of the above

88. Let the market equilibrium price be denoted by p^*. Then

(a) $10 < p^* < 11$

(b) $14 < p^* < 15$

(c) $16 < p^* < 17$

(d) None of the above

89. Let A be the set $\{f(x) \mid 0 < x < 1\}$. What does it mean if we say that y is not an element of A?

(a) $f(y)$ is not an element of A

(b) $f(y)$ is not between 0 and 1

(c) y is not between $f(0)$ and $f(1)$

(d) None of the above

90. Which of the following statements is false?

(a) The numbers 4, 5, 6, 7 have the same standard deviation as the numbers 1231, 1232, 1233, 1234

(b) The numbers 1, 5, 7, 9 have a smaller standard deviation than the numbers 1231, 1235, 1237, 1239

(c) The numbers 1, 5, 6, 10 have a larger standard deviation than the numbers 1231, 1235, 1236, 1254

(d) The numbers 1, 2, 9, 10 have the same standard deviation as the numbers 1231, 1232, 1239, 1240

42/30

Question Nos. **91** and **92** are to be answered on the basis of the following information :

One of *A*, *B*, *C* and *D* has cheated in the examination with the help of another one of them. Here are the statements that these individuals made to the investigator.

A : If *B* is guilty of some wrong-doing, then *C* must be innocent.

B : If *A* is innocent, then *C* must be guilty.

C : If *B* cheated in the examination, then *D* must have had nothing to do with any wrong-doing.

D : I am innocent.

The statements of the person who has cheated and his accomplice are false and those of the remaining two are true.

91. The person who cheated in the examination was

(a) *A* (b) *B*

(c) *C* (d) *D*

92. The accomplice of the person who cheated in the examination was

(a) *A* (b) *B*

(c) *C* (d) *D*

93. There are four candidates for an award—*A*, *B*, *C* and *D*.

Only one of the four candidates had cleared both Tests I and II.

Only one candidate had cleared both Tests I and III.

Only one candidate had cleared both Tests I and IV.

Only one candidate had cleared both Tests II and III.

Only one candidate had cleared both Tests II and IV.

Only one candidate had cleared both Tests III and IV.

Both *A* and *B* had cleared Test I.

Both *C* and *D* had cleared Test II.

Both *B* and *C* had cleared Test III.

D had cleared Test IV.

The award went to the candidate who had cleared more tests.

The award was given to

(a) *A* (b) *B*

(c) *C* (d) *D*

94. A firm has a production function $q = 4x^{\frac{1}{2}}$, where q and x denote the quantities of output and input respectively. If the price of the output is Rs 90 per unit and the price of the input is Rs 20 per unit, the firm can earn a maximum profit of

(a) Rs 1,620

(b) Rs 3,600

(c) Rs 808

(d) None of the above

95. The short-run supply curve of a competitive firm is given by

(a) the marginal cost curve of the firm

(b) the marginal cost curve above the average cost curve

(c) the marginal cost curve above the average variable cost curve

(d) the upward sloping part of the marginal cost curve

96. In situation I : Price of good X is twice the price of good Y; and the consumer spends his entire income on buying 6 units of good X and 20 units of good Y. In situation II : Consumer's income is double of his income in situation I, price of good Y is twice the price of good Y in situation I, and the price of good X is the same as in situation I. The consumer wants to continue consuming 20 units of good Y in situation II. The maximum number of units of good X that he can purchase in situation II is

(a) 12

(b) 14

(c) 16

(d) 6

97. Let units of good 1 be measured on the horizontal axis and units of good 2 on the vertical axis. Let price of good 1 be p and price of good 2 be q. The slope of the budget line is then given by

(a) p/q

(b) $-p/q$

(c) q/p

(d) $-q/p$

Question Nos. **98–100** are to be answered on the basis of the following information :

Five teachers *R*, *S*, *T*, *U*, *V* teach five different subjects—Mathematics, History, Sociology, Economics, Literature. Each teacher teaches once a week on a fixed weekday (Monday through Friday); and each one teaches on a different day from others.

V does not teach Economics; and does not teach on Tuesdays.

S teaches History; and does not teach on a Monday or a Friday.

The Mathematics teacher teaches on Thursdays.

T does not teach Economics; and teaches on Wednesdays.

The Literature teacher, who is not *U*, teaches on Fridays.

R teaches on Mondays.

98. On which day does *S* teach?

(a) Tuesday

(b) Thursday

(c) Friday

(d) None of the above

99. Which subject does *T* teach?

(a) Economics

(b) Sociology

(c) Mathematics

(d) Literature

100. On which day is Economics taught?

(a) Monday

(b) Tuesday

(c) Wednesday

(d) None of the above

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QUESTION PAPER SERIES CODE

A

ENTRANCE EXAMINATION, 2010

M.A. ECONOMICS

[Field of Study Code : ECOM (216)]

Time Allowed : 3 hours *Maximum Marks* : 100

INSTRUCTIONS FOR CANDIDATES

Candidates must read carefully the following instructions before attempting the Question Paper :

(i) Write your Name and Registration Number in the space provided for the purpose on the top of this Question Paper and in the Answer Sheet.

(ii) **Please darken the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

(iii) All questions are compulsory.

(iv) Answer all the 100 questions in the Answer Sheet provided for the purpose by darkening the correct choice, i.e., (a) or (b) or (c) or (d) or (e) with a BALLPOINT PEN only against the corresponding circle. Any overwriting or alteration will be treated as wrong answer.

(v) Each correct answer carries 1 mark. **There will be negative marking and 1/2 mark will be deducted for each wrong answer.**

(vi) Answer written by the candidates inside the Question Paper will not be evaluated.

(vii) Pages at the end have been provided for Rough Work.

(viii) Return the Question Paper and Answer Sheet to the Invigilator at the end of the Entrance Examination. **DO NOT FOLD THE ANSWER SHEET.**

INSTRUCTIONS FOR MARKING ANSWERS

1. Use only Blue/Black Ballpoint Pen (do not use pencil) to darken the appropriate Circle.
2. Please darken the whole Circle.
3. Darken ONLY ONE CIRCLE for each question as shown in example below :

Wrong	Wrong	Wrong	Wrong	Correct
● ⓑ ⓒ ●	ⓐ ⓑ ⓒ ⓓ	ⓐ ● ⓒ ⓔ	ⓐ ⓑ ⓒ ●	ⓐ ⓑ ⓒ ●

4. Once marked, no change in the answer is allowed.
5. Please do not make any stray marks on the Answer Sheet.
6. Do rough work only on the pages provided for this purpose.
7. Mark your answer only in the appropriate space against the number corresponding to the question.
8. **Ensure that you have darkened the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

53/30

1. In a closed economy, the balanced budget multiplier is

   (a) equal to 1

   (b) less than 1

   (c) more than 1

   (d) dependent on the marginal propensity to consume in the economy

2. Stagflation describes a situation of

   (a) rising prices and rising output

   (b) rising prices and falling or stagnant output

   (c) falling or stagnant prices and rising output

   (d) falling or stagnant prices and falling or stagnant output

3. If Canada has a comparative advantage in the production of wheat relative to the United States, it means that

   (a) the opportunity cost of producing wheat is higher in Canada

   (b) the opportunity cost of producing wheat is lower in Canada

   (c) with free trade, Canada will export all of its wheat

   (d) with free trade, the US will not produce any wheat

4. Infant industry protection is

   (a) the policy of ensuring that children are not exposed to pollution

   (b) the policy of protecting a new industry

   (c) the policy of providing bank credit to new firms

   (d) the policy of subsidizing imports to new industries

5. For the countries in the European Union that share a common currency, the euro,

(a) it is impossible to have different real exchange rates from one another

(b) it is possible to have real exchange rates that are different from one another

(c) the nominal and real exchange rates will always vary according to fiscal policy

(d) the nominal and real exchange rates will always vary according to capital flows

6. The current account balance in an open economy

(a) always includes the balance on investment income

(b) never includes the balance on investment income

(c) includes the balance on investment income and flows of investment

(d) includes flows of investment but not the balance on investment income

7. A streetlight is considered as a good example of a public good

(a) because it is provided in public spaces

(b) because its consumption is non-rival and non-excludable

(c) because its consumption is rival but non-excludable

(d) because its consumption is non-rival but excludable

8. The bottom 20 percent of the world's population are estimated to receive around this much of global income

(a) less than 1 percent

(b) around 5 percent

(c) around 10 percent

(d) around 15 percent

9. If an economy is a price taker in world markets for both exports and imports, exchange rate devaluation

(a) will have no effect on the balance of trade

(b) will change the balance of trade [illegible]

(c) will cause the balance of trade [illegible]

(d) will [illegible]

02/52 [illegible] 25/30

10. The 'Gold Standard' refers to an international currency regime under which

(a) only gold was used in international transactions

(b) only gold was used as money in domestic transactions

(c) countries officially linked their money supply to a specific value of gold

(d) countries officially linked the value of their money to a specific

The next six questions **11–16** are based on the following table which gives the
producing the different levels of output of a commodity that a

Output	*Variable Cost of Production*
0	0
1	25
2	42
3	57
4	75
5	
6	
7	
8	
9	
10	

The sunk cost of production in the

11. If the price of the commodity is 20,

(a) 6

(b) 7

(c) 8

(d) 9

12. If the price of the commodity is 19, then the profit-maximizing level of output is

(a) 6

(b) 7

(c) 8

(d) 9

13. Let $\pi(20)$ denote the profit of the firm when the price of the output is 20 and let $\pi(19)$ denote the profit of the firm when the price of the output is 19. Which of the following is correct?

(a) $\pi(20) = \pi(19) = 6$

(b) $\pi(20) < \pi(19)$

(c) $\pi(20) > \pi(19)$

(d) $\pi(20) = \pi(19) = 23$

14. If the price of the commodity is 14, then the profit-maximizing level of output is

(a) 4

(b) 5

(c) 9

(d) None of the above

15. If the price of the commodity is 17, then the profit-maximizing level of output is

(a) 1

(b) 2

(c) 3

(d) 5

57/30

16. If the price of the commodity is 17, then at the profit-maximizing level of output the firm

(a) incurs a loss of 5

(b) incurs a loss of 15

(c) makes a profit of 7

(d) None of the above

17. If good x and good y are perfect substitutes, then the indifference curves will be

(a) strictly convex to the origin

(b) strictly concave to the origin

(c) straight lines

(d) L-shaped

18. A monopolist faces the following demand function $D(P)$:

$D(P) = 10$ for P in the interval $[0, 10]$
$= 20 - P$ for P in the interval $(10, 20]$
$= 0$ for P in the interval $[20, \infty)$

Now suppose that the monopolist has zero variable cost of production and a fixed cost of 1. If he produces any positive amount, it must incur a fixed cost of 1. What is the profit-maximizing monopoly price?

(a) 15

(b) 10

(c) 5

(d) There is no monopoly equilibrium

The next two questions **19** and **20** are based on the following information.

Suppose a consumer wants to consume two commodities x_1 and x_2 which are available in discrete units. Let the prices of the goods be Rs 4 and Rs 3 respectively. The consumer's income is Rs 10.

19. The consumer's budget set is

(a) $\{(x_1, x_2) | 4x_1 + 3x_2 \leq 10$ and $x_1, x_2 \geq 0\}$

(b) $\{(0, 0), (0, 1), (0, 2), (0, 3), (1, 0), (1, 1), (1, 2), (2, 0)\}$

(c) $\{(0, 1), (0, 2), (0, 3), (1, 0), (1, 1), (1, 2), (2, 0)\}$

(d) $\{(1, 2)\}$

20. Suppose the price of both commodities fall by 10 paisa and money income increases by 10 paisa. If the preference of the consumer over the two goods have not changed, then

(a) at the optimum, the consumer would consume more of both commodities

(b) at the optimum, the consumer would consume more of commodity 1 and less of commodity 2

(c) at the optimum, the consumer would consume less of commodity 1 and more of commodity 2

(d) the consumer's optimal bundle does not change

21. Satish is very conscious about the food he eats. He only eats *rotis* and *dal*; a cup of *dal* costs Rs 2 while each *roti* costs Re 1 and Satish decides to spend only Rs 13 per day on food. Also he decides to consume exactly 5500 calories a day; he has been told that each *roti* has 1000 calories while each cup of *dal* has 500 calories. He spends his entire money allocated on foods. Then

(a) he consumes 3 *rotis* and 5 cups of *dal* per day

(b) he consumes no more than 3 *rotis* per day

(c) he consumes no more than 5 cups of *dal* per day

(d) he consumes 3 *rotis* and 4 cups of *dal* per day

22. A monopolist has a demand curve with constant price elasticity with absolute value 4. The monopolist charges a price of Rs 60 per unit of output. What is its marginal cost at this level of output?

(a) 23·5

(b) 336

(c) 45

(d) 54

23. In a two-good world, a consumer's utility function is given by the following :

$U(x, y) = \min(x, y)$, where x and y are the amounts consumed of the first and second good respectively. The price of both goods are Re 2 per unit. The consumer's income is Rs 100. His optimal consumption bundle is

(a) either (zero unit of x and 50 units of y) or (50 units of x and zero unit of y)

(b) 50 units of x and 50 units of y

(c) 25 units of x and 25 units of y

(d) None of the above.

24. A firm has a production function $q = A \cdot K^{0.5} L^{1.8}$, where A is a positive constant. Such a production function exhibits

(a) decreasing returns to scale and diminishing marginal product for factor K

(b) increasing returns to scale and diminishing marginal product for factor K

(c) decreasing returns to scale and increasing marginal product for factor K

(d) constant returns to scale with increasing marginal product for factor K

25. The short-run supply curve for a competitive firm is given by

(a) the marginal cost curve of the firm

(b) the marginal cost curve above the average cost curve

(c) the marginal cost curve above the average variable cost

(d) the upward sloping part of the marginal cost curve

26. If $X_1, X_2, \cdots, X_n$ are non-negative real numbers,

(a) Arithmetic Mean ≤ Geometric Mean

(b) Geometric Mean ≤ Arithmetic Mean

(c) Arithmetic Mean = 0.5 (Geometric Mean)

(d) There is no fixed relationship between Arithmetic Mean and Geometric Mean

27. If $(x/b) > (b/c)$, then

(a) $xc > b^2$

(b) $xc < b^2$

(c) $xc = b^2$

(d) Cannot say anything about the relation between xc and b^2

28. Let $f(x) = (\log(x))/x$, where $0 < x < \infty$

(a) $f'(x) < 0$

(b) $f'(x) > 0$

(c) $f'(x) > 0$, if $0 < x < 0.75$ and $f'(x) < 0$ if $x > 0.75$

(d) $f'(x) > 0$, if $0 < x < 0.5$ and $f'(x) < 0$ if $x > 0.5$

29. Given two numbers $x = (3\sqrt{7}+4\sqrt{7})^2$ and $y = 343$, which of the following must be true?

(a) $x > y$

(b) $y > x$

(c) $x = y$

(d) $x = y/2$

30. Beena's average score after 8 class tests is 84. In her first 7 class tests, Beena's average score was 85. In her last class test, Beena has scored

(a) 82

(b) 87

(c) 77

(d) None of the above

31. The function $f(x) = \log_{10} x$ is continuous over the interval

(a) $(-a, a)$, where $a > 0$

(b) $(-\infty, +\infty)$

(c) $[-a, a]$, where $a > 0$

(d) $(0, 1)$

32. If $a \cdot b = M$, M is different from 0 and $(a + b) = 4$, then

(a) there are always real values for a, b

(b) whenever $4 \geq M > 0$ there are real values for a, b

(c) whenever $0 > M$ there are positive values for both a, b

(d) whenever $0 > M$ there are negative values for both a, b

33. Let $X_1, X_2, \ldots X_{20}$ and $Y_1, Y_2, \ldots Y_n$ be two collections of sets. Suppose every X_i contains 5 elements and every Y_j contains 2 elements and $\bigcup_{i=1}^{20} X_i = S = \bigcup_{j=1}^{n} Y_j$. If each element of S belongs to exactly 10 of the X_is and to exactly 4 of the Y_js, then n is

(a) 10

(b) 20

(c) 100

(d) 50

34. Suppose interest is compounded half-yearly at the rate of 10% per annum. If the present value of an asset which returns a fixed sum of Rs X after one year and nothing thereafter is Rs 50,000, then X is equal to

(a) Rs 54,875

(b) Rs 55,000

(c) Rs 55,125

(d) Rs 55,250

35. If the elasticity of $f(x)$ with respect to x is $0 \cdot 5 (f(x) > 0$ and $x > 0$, then the elasticity of $f(x)/x$ with respect to x is

(a) $-0 \cdot 5$

(b) 0

(c) 0·5

(d) 1

36. In an examination, there are three multiple-choice questions. Each question has 4 choices. Number of ways in which a student can fail to get all answers correct is

(a) 12

(b) 27

(c) 63

(d) 72

37. A function is selected at random from all the functions from $[n]$ to itself. The probability that the function selected is a bijection is

(a) $\frac{1}{n^n}$

(b) $\frac{2}{(n-1)!}$

(c) $\frac{1}{n!}$

(d) $\frac{(n-1)!}{n^{n-1}}$

38. A fair die has given the number 6 on five consecutive throws. What is the probability that the next throw will also give the number 6?

(a) 1/30

(b) 1/6

(c) 5/6

(d) None of the above

39. The number 0·999999... is

(a) exactly equal to 1

(b) slightly less than 1

(c) slightly more than 1

(d) between 0·99 and 0·999

40. Let $S = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \cdots$

Then

(a) S is equal to 4

(b) S is equal to 6

(c) S is equal to 8·5

(d) the sum S does not converge to any finite value

41. Which of the following is a function?

(a) A rule that assigns to the circumference of a rectangle to its area

(b) A rule that assigns to each number its square root

(c) A rule that assigns to each person in a classroom his or her height

(d) A rule that assigns to each person his or her years of education

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The next four questions **42–45** are based on the following :

Consider a country in which there are four different types of people Red, Blue, Green and Yellow. All Reds earn the same income. The same is true about the Blues, Greens and Yellows. However the Red income, the Blue income, the Green income and Yellow income can be different from each other. A distribution of income of the country (D_i) specifies the Red income, Blue income, Green income and Yellow income and also the number of Reds, Blues, Greens and Yellows. The following table gives the possible income distributions for the country.

	Income				*Number of Individuals*		
	Red	*Blue*	*Green*	*Yellow*	*Red*	*Blue*	*Green*
D_1	1	2	3	4	1	1	1
D_2	3	4	1	2	1	1	1
D_3	5	10	15	20	1	1	1
D_4	0·8	1·6	2·4	5·2	1	1	1
D_5	2·5	2·5	2·5	2·5	1	1	1
D_6	1	2	3	4	5	5	5

42. Let G_i denote the Gini coefficient for the income distribution D_i. Which of the following is true?

(a) $G_5 < G_1 = G_2 = G_3 = G_6 = G_4$

(b) $G_5 < G_1 = G_2 = G_3 = G_6 < G_4$

(c) $G_1 > G_2 > G_3 > G_4 > G_5 > G_6$

(d) $G_1 < G_2 < G_3 < G_4 < G_5 < G_6$

43. Let σ_i denote the standard deviation for the income distribution D_i. Which of the following is true?

(a) $\sigma_5 < \sigma_1 = \sigma_2 = \sigma_6 < \sigma_4 < \sigma_3$

(b) $\sigma_5 < \sigma_1 = \sigma_2 = \sigma_6 < \sigma_3 < \sigma_4$

(c) $\sigma_5 < \sigma_1 = \sigma_2 < \sigma_6 < \sigma_4 < \sigma_3$

(d) $\sigma_5 < \sigma_1 = \sigma_6 < \sigma_2 < \sigma_4 < \sigma_3$

44. Let μ_i denote the median for the income distribution i. Which of the following is true?

(a) $\mu_4 < \mu_1 = \mu_2 = \mu_5 < \mu_6 < \mu_3$

(b) $\mu_4 < \mu_1 = \mu_2 = \mu_5 = \mu_6 < \mu_3$

(c) The mean is equal to the median for each of the given distributions

(d) The mean is different from the median for each of the given distributions

45. Consider the five income distributions D_1, D_2, D_3, D_4, D_5. Which of the following is true?

(a) There is no Pareto-optimal distribution

(b) All distributions are Pareto-optimal

(c) D_3 is the only Pareto-optimal distribution

(d) D_1 and D_3 are the only Pareto-optimal distributions

The next three questions 46–48 are based on the following :

Ms. *A* wishes to renovate her cottage. She hires the services of a plumber, a carpenter, a painter, an electrician and an interior decorator. The renovation is to be completed in a period of one working week, i.e., Monday to Friday. Every worker will be taking one complete day to do his job. Ms. *A* will allow just one person to work per day.

The painter can do his work only after the plumber and the carpenter have completed their jobs. The interior decorator has to complete his job before that of the electrician. The carpenter cannot work on Monday or Tuesday.

46. In case the painter works on Thursday, which among the following alternatives is possible?

(a) The electrician works on Tuesday

(b) The electrician works on Friday

(c) The interior decorator does his work after the painter

(d) The plumber and the painter work on consecutive days

47. In case the painter works on Friday, which among the following statements must be untrue?

(a) The carpenter may work on Wednesday

(b) The carpenter and the electrician may work on consecutive days

(c) In case the carpenter works on Thursday, the electrician has to work on the previous day, i.e., Wednesday

(d) The plumber may work before the electrician does

48. Which arrangement among the following is possible?

(a) The painter will work on Wednesday and the plumber on Thursday

(b) The carpenter will work on Tuesday and the painter on Friday

(c) The painter will work on Monday and the carpenter on Thursday

(d) The carpenter will work on Wednesday and the plumber on Thursday

49. There are two egg delivery boys you can order eggs from. The probability of the first boy falling and breaking all the eggs is $\frac{1}{2}$ and the probability of the second boy breaking all the eggs is $\frac{1}{5}$. How would you distribute your order for eggs to minimize expected total loss of eggs?

(a) Order all your eggs from the first boy

(b) Order all your eggs from the second boy

(c) Distribute the order for eggs between the two boys equally

(d) Order three-fourths of your eggs from the first boy and the remaining from the second boy

50. If you integrate the function $f(x) = 1/x$ from 1 to 3, you get

(a) 2

(b) log 3

(c) log 4

(d) None of the above

51. If $x < y + \varepsilon$, for all $\varepsilon > 0$, then

(a) $x > y$

(b) $x \leq y$

(c) $x > 0 > y$

(d) $x < 0 < y$

52. The rate of interest is

(a) a flow variable

(b) a stock variable

(c) the ratio of a flow variable to a stock variable

(d) the ratio of a stock variable to a flow variable

53. The fiscal deficit is

(a) a flow variable

(b) a stock variable

(c) the ratio of a flow variable to a stock variable

(d) the ratio of a stock variable to a flow variable

54. If in a given year a country's GDP at constant prices is 1000 currency units and the value of its implicit GDP deflator for that year is 110, the value of the country's GDP at current prices (in its currency units) is

(a) 890

(b) 909·09

(c) 990·09

(d) 1100

55. Suppose the difference between the transactions velocity and the income velocity of circulation of money in an economy is 5 and the money value of total transactions is 6 times the money value of aggregate income. If the quantity of money in circulation is 1000 currency units, then the money value of aggregate income in currency units is

(a) 1050

(b) 1200

(c) 1500

(d) 1800

56. Suppose an asset provides returns of Rs 315 after one year, Rs 661·50 after two years and Rs 1,389·15 after three years and nothing thereafter. If interest is compounded yearly and the rate of interest is 5% per annum, what is the present discounted value of the asset?

(a) Rs 2,050

(b) Rs 2,100

(c) Rs 2,205

(d) Rs 2,315

57. Suppose a plant can be used to produce in a day x units of product 1 and y units of product 2 where $y = (32 - 5x)/(10 - x)$, where $32/5 \geq x \geq 0$. If the unit price of product 1 is twice the unit price of product 2, then to maximize total revenue the number of units of x the plant should be used to produce in a day is

(a) 4

(b) 5

(c) 6

(d) 6·4

The next four questions **58–61** are based on the following :

Suppose, in equilibrium, aggregate income (in units of money per year)
where investment expenditure (in units of money per year)
expenditure (in units of money per year) C satisfies the

(i) C is a function of current disposable income

(ii) If $Y_d = 0$, then $C = 500$

(iii) Marginal propensity to save out of Y_d

Suppose the government collects direct tax revenue
transfer payments equal to 750 units of money

58. What is the value of the

(a) Between 1·9 and 2·1

(b) Between 2·1 and 2·3

(c) Between 2·3 and 2·5

(d) More than 2·5

59. What is the equilibrium

(a) Between 3250 and 3750

(b) Between 3750

(c) Between 4250 and 4750

(d) Between 4750 and 5250

60. If instead of 750 units of money the government makes annual transfer payments equal to 10% of Y, then the value of the investment multiplier will

(a) decrease by less than unity

(b) decrease by more than unity

(c) increase by less than unity

(d) increase by more than unity

61. If instead of 750 units of money the government makes annual transfer payments equal to 10% of Y, then the equilibrium value of Y will

(a) decrease by less than 1000

(b) decrease by more than 1000

(c) increase by less than 1000

(d) increase by more than 1000

The next three questions 62-64 are based on the following information :

A student has taken 5 courses : Philosophy, Biology, Economics, Mathematics and Literature. He studies for these courses according to the following pattern :

Every week the student studies for exactly three courses.

If he studies Biology in a week, then he also studies Philosophy that week.

If he studies Economics in a particular week, then he does not study it in the following week.

In any particular week he studies not more than one of the subjects studied in the preceding week.

62. Which of the following is a possible sequence of combinations for the student in the two successive weeks?

(a) Week 1 : Philosophy, Biology, Economics; Week 2 : Biology, Mathematics, Literature

(b) Week 1 : Philosophy, Biology, Mathematics; Week 2 : Philosophy, Biology, Literature

(c) Week 1 : Philosophy, Mathematics, Literature; Week 2 : Philosophy, Biology, Economics

(d) Week 1 : Biology, Mathematics, Literature; Week 2 : Philosophy, Economics, Mathematics

63. If the student studies Philosophy, Biology and Economics in the first week, which of the following combinations must be studied in the third week?

(a) Philosophy, Biology and Economics

(b) Philosophy, Biology and Mathematics

(c) Philosophy, Economics and Mathematics

(d) Economics, Mathematics and Literature

64. If the student studies Philosophy, Literature and Mathematics in the first week, which of the following combinations must be studied in the eleventh week?

(a) Philosophy, Literature and Mathematics

(b) Philosophy, Biology and Mathematics

(c) Philosophy, Economics and Mathematics

(d) Economics, Mathematics and Literature

65. If x, y and z are consecutive negative integers, and if $x > y > z$, which must be a positive odd integer?

(a) xyz

(b) $(x-y)(y-z)$

(c) $x-yz$

(d) $x(y+z)$

66. Suppose one wishes to prove that "if all X are Y, then all Z are W". It would suffice to show that

(a) all Z are X, and all W are Y

(b) all Y are Z, and all W are X

(c) all X are Z, and all Y are W

(d) all Z are X, and all Y are W

67. Let X and Y be statements. If we want to disprove "X implies Y", it would suffice to show that

(a) X is false

(b) Y is false

(c) X is true, but Y is false

(d) Y is true, but X is false

68. Let X, Y and Z be statements. Suppose we know that X implies Y, and that Z implies X. We also know that Y is false. We can infer that

(a) X is false, and Z is true

(b) X is true, and Z is false

(c) both X and Z are true

(d) both X and Z are false

69. Let X and Y be statements. Which of the following strategies is ***not*** a valid way to show that "X implies Y" ?

(a) Show that some statements Z implies Y, and then show that X implies Z

(b) Show that either X is false, or Y is true, or both

(c) Assume that X is false, and Y is true, and deduce a contradiction

(d) Assume that X is true, and Y is false, and deduce a contradiction

70. Let $P(n, m)$ be a property about two integers n and m. If we want to prove that "for every integer n, there exists an integer m such that $P(n, m)$ is true", then we should do the following

(a) Let n and m be arbitrary integers. Then show that $P(n, m)$ is true

(b) Find an integer m such that $P(n, m)$ is true for every integer n

(c) Let n be an arbitrary integer. Then find an integer m possibly depending on n such that $P(n, m)$ is true

(d) Find an integer n and an integer m such that $P(n, m)$ is true

71. Let X and Y be statements. If we know that X implies Y, then we can also conclude that

(a) X is true, and Y is also true

(b) if X is false, then Y is false

(c) if Y is true, then X is true

(d) if Y is false, then X is false

72. Let X, Y and Z be statements. Suppose we know that X implies Y, and that Y implies Z. If we also know that X is false, we can infer that

(a) Y is true, and Z is false

(b) Y is false, and Z is true

(c) both Y and Z are false

(d) None of the above

73. The United States is a major exporter of

(a) diamond

(b) bauxite

(c) coffee

(d) corn

74. The terms of trade are

(a) the countries' production possibilities curve

(b) the autarky equilibrium

(c) the exchange rate of the two goods being traded

(d) the value of exports

75. Autarky means that

(a) a country's consumption possibilities are

(b) equilibrium attained with the

(c) equilibrium has been reached with the

(d) the nation has such a high

76. Linear accelerator has the following

(a) Depends on expectations and

(b) Depends on expectations and

(c) Does not depend on expectations

(d) Does not depend on expectations and

77. If the saving propensity is 14% and the incremental capital output ratio is 4, and the population rate of growth is 3%, there is constant returns to scale and no technical progress

(a) warranted rate of growth is greater than the natural rate of growth

(b) warranted rate of growth is less than the natural rate of growth

(c) the economy will always grow at 3% rate of growth

(d) the economy will always grow at more than 3% rate of growth

78. There are four bus routes between A and B and three bus routes between B and C. A man can travel round trip in number of ways by bus from A to C via B. If he does not want to use a bus route more than once, in how many ways can he make round trip?

(a) 72

(b) 144

(c) 14

(d) 19

79. The Economics Nobel Prize for the year 2009 was awarded to

(a) Elinor Ostrom and Oliver Williamson

(b) Paul Krugman

(c) John Nash

(d) Robert Aumann and Thomas Schelling

80. Consider the set $A = \{x | 0 < x < 1\}$. What is the minimum number that belongs to set A?

(a) 0

(b) 0·001

(c) 0·00002

(d) There is no minimum number in set A

81. In the list of five countries given below, choose the one which has a positive trade surplus

(a) USA

(b) Great Britain

(c) Greece

(d) China

82. Which one of the statements given below is correct for the year 2000–01?

(a) The primary sector of the Indian economy is 50% of the GDP

(b) The tertiary sector of the Indian economy is 50% of the GDP

(c) The GDP contribution of the primary sector of the Indian economy is larger than that of the secondary sector

(d) The GDP contribution of the secondary sector of the Indian economy is larger than that of the tertiary sector

83. If utensils worth Rs 100 are produced with steel worth Rs 50, wages paid [illegible] depreciation of machinery is 0 and other material purchased is Rs 10, then [illegible] in the process is

(a) Rs 40

(b) Rs 50

(c) Rs 100

(d) Rs 10

84. If an economy produces GDP of Rs 30 billion per year [illegible] Rs 135 billion, then capital output ratio is a

(a) stock variable with a value of Rs 4·5 billion

(b) stock variable with a value 4·5 years

(c) flow variable with a value of Rs 4·5 billion

(d) flow variable with a value of 4·5 as pure number

85. An economy has a proportionate income tax [illegible] consume of α and marginal propensity to import of [illegible] $m = 0 \cdot 1$. The short-run investment multiplier of the [illegible]

(a) $1/[1-\alpha(1-t)+m] = 50/23$

(b) $1/[1-(\alpha-m)(1-t)] = 25/11$

(c) $1/[1-\alpha(1-t)-m] = 50/3$

(d) $1/[1-\alpha+t+m] = 2$

86. The 'Sub-prime Lending' crisis was originated in

(a) India

(b) USA

(c) UK

(d) China

87. In the following statements, 'investment' is meant to be investment from a macroeconomic point of view. The following transactions (i), (ii) and (iii) have taken place in the economy :

(i) Your family has taken out a mortgage from a bank and purchased a new house with the loan advanced to your family by the bank.

(ii) You have used your salary to buy share of the Steel Authority of India Ltd.

(iii) You draw money from your savings bank account of State Bank of India (SBI) and invest in SBI mutual fund share.

Indicate which combination of statements is correct

(a) Transaction in (i) represents an act of net zero investment, transaction in (ii) represents an act of net positive saving, transaction in (iii) represents an act of net positive investment

(b) Transaction in (i) represents an act of net positive investment, transaction in (ii) represents an act of net positive saving, transaction in (iii) represents an act of net positive saving

(c) Transaction in (i) represents an act of net positive investment, transaction in (ii) represents an act of net investment, transaction in (iii) represents an act of saving

(d) Transaction in (i) represents an act of net positive investment, transaction in (ii) represents an act of net positive saving, transaction in (iii) represents an act of net zero saving

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88. The sum of the first n odd integers is

(a) n^2

(b) n^3

(c) n

(d) $4n$

89. Which of the following will be an inverse function of $f(x) = x^2$?

(a) $g(y) = 1/y$

(b) $g(y) = y^2$

(c) $g(y) = \frac{1}{2}y$

(d) There is no inverse function

90. The share of the primary sector in the [illegible] around

(a) 50 percent

(b) 60 percent

(c) 70 percent

(d) 80 percent

91. The country with the largest [illegible]

(a) Brazil

(b) Argentina

(c) China

(d) United States

92. The beginning of modern industry in India occurred in

(a) the late 18th century

(b) the beginning of the 19th century

(c) the middle of the 19th century

(d) the turn of the 20th century

93. Market capitalization in the Bombay Stock Exchange (BSE) rose by 100 percent in a single year. This means that

(a) the sensex rose by 100 percent during that year

(b) the value of shares traded at the BSE over the year increased by 100 percent when compared with the previous year

(c) the value of all outstanding shares of companies listed at the BSE rose by 100 percent

(d) the prices of every share listed at the BSE rose by 100 percent

94. Two events are said to be independent if

(a) Prob(A and B) = Prob(A) · Prob(B)

(b) Prob(A and B) = Prob(A) + Prob(B)

(c) Prob(A/B) = Prob(A) – Prob(B)

(d) Prob(A/B) = Prob(A) – Prob(B) + Prob(A and B)

95. Which of the following is *not* a tool of monetary policy?

(a) The tax rate

(b) The interest rate

(c) The cash-reserve ratio

(d) Open-market operations of the central bank

Read the following passage and answer the questions **96–100** :

"In the beginning, money was a commodity like any other, save that its physical characteristics allowed of its being divided into parts of varying but specific weight, and it had high enough worth in small enough bulk so that it could be readily carried around. Thus it served as an intermediate step in exchange, eliminating the inherent awkwardness of barter. And it was a convenient way of holding wealth—a storehouse of value.

But in major measure the separate identity of money, its personality, was discovered with the establishment of banks; through banks the supply of money could be increased or, on occasion, sharply diminished, and this, more or less at will. The funds thus made available could be used for investment, necessary or frivolous consumption or the needs of the State.

Together, the deposits and the banknotes were in excess of the value of the metal on which they were based. This, however, was entirely safe and acceptable for so long as [illegible] depositors, borrowers, noteholders—did not come at the same time for their [illegible] there were fear, panic or spreading rumour and unease about the competence of the bank—all by no means negligible possibilities—this would not happen.

Given the profits possible from this manufacture of money—the [illegible] effortless act of lending—the temptation to overdo a quite wonderful thing was great. From this temptation were born the central banks and much of the structure of modern banking. In return for various privileges, including in latter times the [illegible] central banks came into existence. They then proceeded to regulate the creation of the lesser banks, which they did in an inconvenient way. They lent to the smaller banks their notes for payments in metal and [illegible] reserves against deposits."

(John Kenneth Galbraith, A History of Economics : The [illegible]

96. Galbraith argues that

(a) money was a commodity like any other until [illegible]

(b) money was at first a commodity that could be carried around easily

(c) the physical feature of money being [illegible] gives it a special personality

(d) money can never be more than an [illegible]

97. The presence of banks means that

(a) money in circulation can be in excess of [illegible]

(b) deposits in banks must always be [illegible]

(c) money is always safe in banks and this is [illegible]

(d) banks are the basic storehouse of value

98. Central banks exist because

(a) banks earn profits—in the form of a return in interest—from an effortless act of lending

(b) the funds loaned out can be used for investment, necessary or frivolous consumption or the needs of the State

(c) all banks want the exclusive power to issue notes

(d) it is necessary to regulate the lending and money creation of lesser banks, given the temptation to overdo lending

99. Minimum levels of reserves against deposits

(a) is a rule that money creation necessarily imposes on all banks

(b) are necessary because depositors, borrowers and noteholders all come to banks at the same time for their money

(c) are part of the regulatory actions of central banks

(d) are returns for various privileges that are accorded to banks

100. The supply of money in an economy can be increased or decreased at will

(a) because of the inherent awkwardness of barter

(b) through the activities of banks

(c) because money is a storehouse of value

(d) since deposits and banknotes cannot be in excess of the metal on which they are based

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