Registration No. :

Centre of Exam. : _____

Name of Candidate : _____

_____
Signature of Invigilator

ENTRANCE EXAMINATION, 2017
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 the Question Paper Series Code on the OMR Sheet** with a BALLPOINT PEN. Any overwriting or alteration will be treated as wrong answer.

(iii) The question paper has two parts : Section—A and Section—B. Marks obtained in Section—A will be used for shortlisting candidates for whom answers for Section—B will be evaluated. Final selection will be on the basis of total marks obtained in Section—A and Section—B.

(iv) Section—A, in turn, has two parts : Section—A1 and Section—A2. Section—A1 has 30 questions, each carrying 1 mark. Section—A2 has 10 questions, each carrying 2 marks.

(v) Answer ALL the questions of Section—A1 and Section—A2 in the OMR 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.

(vi) **There will be negative marking and for each wrong answer, 1/4 mark would be deducted for 1 mark questions (in Section—A1) and 1/2 mark would be deducted for 2 mark questions (in Section—A2).**

(vii) Answers for Section—B should be written in the Question Paper itself in the space provided with each question.

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

(ix) 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.**

Question Nos. **1–30** carry *1* mark each. For each wrong answer, 1/4 mark will be deducted.

1. Demonetisation refers to

   (a) the shift from cash money-based to non-cash money-based means of transacting

   (b) the de-recognition by the central bank of some currency notes as legal tender

   (c) the declaration of some currency notes as counterfeit or the result of corrupt practices

   (d) the physical removal of some currency notes from circulation

2. X is a random variable that takes the values *(i)* 1 with probability p and *(ii)* −1 with probability $(1 - p)$. Assume that $0 < p < 1$. Let $Y = X^2$. Which one of the following statements is true?

   (a) The mean of Y is $(2p - 1)^2$.

   (b) The variance of Y is zero.

   (c) The variance of Y depends on the value of p.

   (d) None of the above

3. X is a random variable with mean equal to 1 and variance equal to 9. Let $Y = 3 \times X + 6$ and $W = -3 \times X + 6$. Which one of the following statements is true?

   (a) The covariance of W and Y cannot be calculated from the given information.

   (b) The covariance of W and Y is equal to −9.

   (c) The correlation coefficient of W and Y is equal to −1.

   (d) The correlation coefficient of W and Y is equal to 1.

4. The correlation coefficient of X and Y is known to be zero. We can then conclude that

   (a) X and Y are independent random variables

   (b) X and Y are identically distributed

   (c) there exists no linear relationship between X and Y

   (d) None of the above

Direction : Answer Question Nos. **5–7** on the basis of the following :

Random variable X can take two values : 1 and 2. Random variable Y can take three values : 1, 2 and 3. The joint probability distribution of X, Y is given by $f(x, y) = k \times x \times y$, where $x = 1, 2$ and $y = 1, 2, 3$.

5. What is the value of k?

    (a) 1/6

    (b) 1/9

    (c) 1/18

    (d) 1/21

6. What is the probability that random variable X takes the value 2?

    (a) 2/3

    (b) 1/3

    (c) 1/2

    (d) 3/4

7. What is the expected value of the random variable Y?

    (a) 2

    (b) 7/3

    (c) 4/3

    (d) 3/2

8. *A* and *B* are two events. B^C is the complement of *B*. It is known that *(i)* $P(A)$, the probability of event *A*, is $1/3$ and *(ii)* $P(B^C)$, the probability of event B^C, is $1/5$. Which one of the following statements is certainly true?

(a) *A* and *B* are independent events.

(b) *A* and *B* are disjoint (i.e., mutually exclusive) events.

(c) *A* is a subset of *B*.

(d) None of the above

9. *A* and *B* are events. $P(A)$, the probability of event *A*, is strictly greater than 0. $P(B)$, the probability of event *B*, is strictly greater than 0. *A* and *B* are independent events. B^C is the complement of *B*. A^C is the complement of *A*. Which one of the following statements is certainly true?

(a) The intersection of *A* and *B* is the null set.

(b) Events *A* and B^C cannot be independent.

(c) Events A^C and B^C are independent.

(d) None of the above

10. Let $x = 2\%$ of 0.03. Let $y = x/100$. Then, *y* is equal to

(a) 6×10^{-4}

(b) 0.0006

(c) 0.00006

(d) 0.000006

11. The initial wealth of a person is ₹x. It is known that wealth doubles every two years. 50 years after the initial point of time, the person's wealth equals ₹ 10 lakhs. When was the person's wealth equal to ₹5 lakhs?

(a) 25 years after the initial point of time

(b) 24 years after the initial point of time

(c) The answer depends on the value of x

(d) None of the above

12. Four students A, B, C and D took a test. The average score of A and D is 85, that of C and D is 90, and that of B and C is 75. What is the average score of A and B?

(a) 70

(b) 75

(c) 80

(d) 85

13. A function $f()$ satisfies the following two properties :

(i) $f(1) = 1$

(ii) $f(a) = (a - 1) \times f(a - 1)$

where a is any positive real number. Assume that n is a positive integer. Which one of the following statements is certainly true?

(a) $f(n) = (n - 1)$

(b) $f(n) = (n - 1)!$

(c) $f(n) = n \times (n - 1)$

(d) $f(n)$ cannot be computed from the information given

14. Consider the following quadratic function of t :

$$f(t) = a + b \times t + c \times t^2$$

where a, b, c and t are real numbers. It is known that for all values of t, $f(t) \geq 0$. A real number x is called a root of the function f if it satisfies the condition $f(x) = 0$. Which one of the following statements is certainly true?

(a) The function f has exactly two roots.

(b) The function f has no roots.

(c) The function f has exactly one root.

(d) The function f has at most one root.

15. Consider the function $f(x) = x / e^x$. Which one of the following statements is true?

(a) There is no value of x such that $f'(x) = 0$

(b) $f'(x) > 0$ for all values of x

(c) $f'(x) \leq 0$ for all values of x

(d) $f''(x) = x / e^x - 2 / e^x$

16. The number p solves the following equation :

$$\int_0^p e^{2x} dx = 1$$

What is the value of p?

(a) 0

(b) $(1/2) \times \ln 3$

(c) $\ln 2$

(d) $(1/2) \times \ln(3/2)$

17. Angle θ is an acute angle and $\sin\theta = 11/14$. What is the value of $4\cos\theta$?

(a) $3/14$

(b) $\sqrt{3}/14$

(c) $\sqrt{(3/14)}$

(d) $10 \times \sqrt{3}/7$

18. If x and y are both even numbers, which of the following could be an odd integer?

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

(b) $(x + 1)^2 + (y + 1)^2$

(c) $(x + 1) \times (y + 1) - 1$

(d) None of the above

19. In the standard (x, y) coordinate plane, the graph of $(x + 3)^2 + (y + 5)^2 = 16$ is a circle. What is the circumference of the circle, expressed in coordinate units?

(a) 4π

(b) 5π

(c) 3π

(d) 8π

20. A person's total spending on grapes rises when the price falls from ₹2 per kg to ₹1 per kg. What can we say about the person's demand for grapes?

(a) Elasticity of demand (in absolute values) is greater than 1

(b) Elasticity of demand (in absolute values) is less than 1

(c) Demand is unit elastic

(d) Demand is inelastic

21. Economy A and Economy B have constant rates of unemployment over time, these being 5% and 10% respectively. The exponential rate of growth of aggregate output in A is a constant 4% and that in B is a constant 8%. The exponential rate of growth of labour productivity in A is 2% and that in B is 4%. Which economy must be having the higher rate of growth of labour force over time?

(a) A

(b) B

(c) Both A and B have the same rate

(d) Information provided is insufficient to answer the question

22. If the aggregate currency with the public reduces and total demand deposits increase by exactly the same amount, the aggregate money supply in the economy would

(a) go up

(b) come down

(c) remain unchanged

(d) None of the above

23. In a barter economy, if a farmer exchanges 100 units of corn for a fish from a fisherman, and if the fisherman keeps 50 units of corn for his own consumption and exchanges 50 units of corn and a fish to buy a piece of cloth from the weaver, then what is the price of the cloth in terms of corn?

(a) 100

(b) 200

(c) 50

(d) 150

24. In a world with only three countries (A, B and C), if countries A and B have trade surpluses, then which of the following can be said (assume exports and imports are both valued fob)?

(a) C must necessarily have a current account deficit

(b) C's trade is balanced

(c) If C has a current account surplus, it must necessarily have a surplus in its invisibles balance

(d) C could also have a trade surplus

25. If the GDP of a country in a year is ₹1,000, its NDP is ₹950 and the expenditures on machinery and equipment, and construction are ₹150 and ₹100 respectively, then what would be its Net Fixed Capital Formation in the year?

(a) ₹150

(b) ₹200

(c) ₹250

(d) Cannot be determined without knowing the change in stocks

26. If a country has a surplus in the capital account of its balance of payments, then its foreign exchange reserves

(a) must necessarily decline

(b) must necessarily increase

(c) would remain unchanged

(d) None of the above

27. In an economy where all employment is wage employment, what will happen to the share of wages in value added if the productivity of labour increases by 10 percent while the annual average real wage goes up by 8 percent?

(a) It will necessarily come down

(b) It will remain unchanged

(c) It will increase

(d) Cannot be determined without knowing what happens to employment

28. Suppose that consumers' preferences satisfy completeness, continuity, transitivity, reflexivity and strong monotonicity. Furthermore, assume that X is a normal good, Y is an inferior good and that the price of good Y increases. Then, which of the following effects is known with certainty?

(a) The income and substitution effect will reinforce one another leading to an overall decrease in the consumption of good X

(b) The income and substitution effect will reinforce one another leading to an overall increase in the consumption of good Y

(c) The income and substitution effect will reinforce one another leading to an overall increase in the consumption of good X

(d) The income and substitution effect will have competing effects leading to an indeterminate impact on the consumption of good Y

29. Amit inherits ₹ 10,000 from a rich uncle. It is observed that even though there have been no change in prices, he continues to eat the same number of Gulab Jamuns per day. Which one of the following statements is necessarily true?

(a) Gulab Jamuns are Giffen goods for Amit.

(b) Amit's Engel curve for Gulab Jamuns is vertical.

(c) Amit's preferences are not homothetic.

(d) None of the above

30. Which one of the following statements is necessarily true?

(a) A monopolist always operates on the inelastic portion of the demand curve it faces.

(b) If a monopolist can charge different prices in two different markets, then it would tend to charge the lower price in the market with the less elastic demand.

(c) The level of output produced by a perfectly price-discriminating monopolist is efficient.

(d) None of the above

Question Nos. **31–40** carry 2 marks each. For each wrong answer, 1/2 mark will be deducted :

31. In a closed economy with unutilised capacity, if the investment rate remains unchange and savings amount to 20 percent of GDP, an increase in the government's fiscal defic by 100 units will cause economic activity to increase by

    (a) 100 units

    (b) 120 units

    (c) 200 units

    (d) 500 units

32. In an open economy with unutilised capacity, if the investment rate remai unchanged, savings amount to 20 percent of GDP and imports account for 30 perce of GDP, an increase in the fiscal deficit by 100 units will cause economic activity increase by

    (a) 70 units

    (b) 100 units

    (c) 200 units

    (d) 300 units

33. Suppose an economy's real output in 2015 was 10 percent below its maximu potential output while in the next year it was only 5 percent less. If net investment w positive and the size of the labour force also increased, then one can say that 1 increase in output in 2016 over that in 2015 was

    (a) exactly 5 percent

    (b) more than 5 percent

    (c) less than 5 percent

    (d) below 10 percent

34. An economy's real GDP per capita in a year was 50 percent greater than a decade earlier and its population grew by 20 percent over the same period. If that economy did not experience a decline in its price level in any year, then the minimum increase in its nominal GDP over the decade had to be

(a) 20 percent

(b) 50 percent

(c) 70 percent

(d) 80 percent

35. Suppose that the currency in circulation in India at the time from which the legal tender status of the old 500 and 1000 rupee notes stood withdrawn was ₹ 18 lakh crores. If over the next 15 days, the public deposited ₹ 7 lakh crores of invalid currency with banks and withdrew ₹ 2 lakh crores of new currency while banks deposited ₹ 6 lakh crores with the RBI, then the currency in circulation at the end of that period would have been (assuming no other transactions which could have influenced it)

(a) ₹ 12 lakh crores

(b) ₹ 11 lakh crores

(c) ₹ 13 lakh crores

(d) Cannot be determined

36. Consider the statements I and II and choose the correct option :

I. If the incomes of some people in an economy grow faster than that of others, the level of income inequality rises.

II. If the level of income inequality in an economy rises, the incomes of some people grow faster than that of others.

(a) Both I and II are always true

(b) I is always true while II is sometimes true

(c) I is sometimes true while II is always true

(d) Both I and II are sometimes true

37. A monopolist claims that his profit-maximising quantity is 10 and the resultant market price is 5. What is the price elasticity of demand for the firm's product?

(a) -1.5

(b) -2.0

(c) -0.5

(d) Cannot be determined

38. Line L_1 passes through the points $(-2, 0)$ and $(0, k)$. Line L_2 passes through the points $(4, 0)$ and $(6, 2)$. What value of k makes the two lines parallel?

(a) $1/2$

(b) -2

(c) 2

(d) $-1/2$

39. If $\log_4(x) = 12$, then $\log_2(x/4)$ is equal to

(a) 11

(b) 48

(c) -12

(d) 22

40. A consumer's preference over commodities 1 and 2 can be represented by the utili function $U(x_1, x_2) = x_1 + x_2$. Suppose the price of commodity 1 changes. Which of th following statements is certainly correct?

(a) There is no income effect on the demand for commodity 1.

(b) There is no substitution effect on the demand for commodity 1.

(c) There is no substitution effect on the demand for commodity 1 if the cheaper goo remains cheaper after the price change.

(d) There is no income effect on the demand for commodity 1 if the cheaper goo remains cheaper after the price change.

14

Attempt *any* **seven** questions out of Question Nos. **41–49**

Each question carries *5* marks

Question No. **50**, which carries *15* marks, is compulsory

41. Consider a closed economy without government spending or taxes. The equilibrium value of output in each period is determined by the equality of (the value of) output and expenditure. Saving in period t is given by $S(t) = s \cdot Y(t)$ and investment expenditure in period $t + 1$ is given by $I(t + 1) = a + b \cdot Y(t)$, for all values of t. a is a positive constant, s and b are positive constants less than unity and $Y(t)$ is the value of output in period t. What relation must hold between the values of s and b for there to exist a value of output in this economy, which once achieved in a time period will continue to persist in subsequent periods of time?

42. Consider an economy in which loans can be of two kinds. Loans may be made and repaid in terms of gold or they may be made and repaid in terms of cash. Suppose all markets are perfectly competitive, which also implies that there are no costs of transacting in markets. In the current period, a loan of 140 gm of gold has to be repaid in the next period with interest of 7 gm of gold, a loan of ₹120 has to be repaid with interest of ₹18 and all lenders and borrowers are indifferent between gold loans and cash loans. What is the expected percentage rise in the rupee price of gold next period?

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

$U(x, y) = \max\{x, y\}$, where x and y are the amounts consumed of the first and second goods respectively. The price of each of the two goods is ₹2 per unit. The consumer's income is ₹100. Draw the consumer's indifference curves and find out his utility-maximising consumption bundle(s).

44. The production sector of a closed economy consists of only two firms, A and B, whic produce products x and y respectively. x is exclusively an intermediate good and tl only intermediate used in the production of both x and y, while y is the final good. Tl unit prices of x and y are ₹ 5 and ₹ 10 respectively. The stocks of unused or unsold x ar y held by the two firms at the beginning and at the end of the year are given in the tal below :

	Stocks at Year Beginning (no. of units)		Stocks at Year End (no. of units)	
	x	y	x	y
Firm A	20	0	25	0
Firm B	10	10	20	20

If firm B's sales in the year are ₹ 10,000, determine the economy's GDP in that year.

45. Teji Singh likes peanut butter and jelly together in his sandwiches. However, Teji is very particular about the proportions of peanut butter and jelly. Specifically, Teji must have 2 scoops of jelly with each 1 scoop of peanut butter. The cost of scoops of peanut butter and jelly are ₹0·50 and ₹ 0·20 respectively. Teji has ₹9 each week to spend on peanut butter and jelly. (You can assume that Teji's mother provides the bread for the sandwiches.) If Teji is maximising his utility subject to his budget constraint, how many scoops of peanut butter and jelly should he buy?

46. Compute $\int_1^2 \dfrac{x^2 + 2x + 1}{x}\, dx$.

47. Suppose a monopolist faces the following inverse demand function :

$$p = e^{-Q}$$

The monopolist can produce any positive level of output with zero variable cost. Its fixed cost is F. Find the profit-maximising output for two cases *(i)* when $F = 0\cdot 1$ and *(ii)* when $F = 0\cdot 5$.

48. Find the global maximum of $f(x) = x^3 - 3x$ in the interval $[-2, 3]$.

49. a and b are real numbers. If $a < b + \varepsilon$ for all real numbers $\varepsilon > 0$, then show that $a \le b$.

50. Answer any *one* of the following in not more than *500* words :

    (a)   When President Trump of the United States says that he will create an economic recovery in the US by lowering tax rates and increasing military and infrastructure spending, what is the economic argument he is relying upon? What are the assumptions of this argument?

    (b)   Can a reduction in currency held with the public cause a decline in economic activity in an economy like that of India? Explain your answer.

    (c)   Critically examine the argument that a fiscal deficit necessarily has the effect of crowding out private investment in a closed economy.

    (d)   Can a service dominated growth process solve India's employment problem?

SPACE FOR ROUGH WORK

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