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Entrance Test for MA (Economics) 2017

[PROGRAMME CODE : 30002]

Question Paper Series Code : A

QUESTION PAPER

Time : 3 hours   *Maximum Marks* : 100

INSTRUCTIONS FOR CANDIDATES

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

(i)   Write your Name, Roll Number and Name of the Test Centre in the space provided for the purpose on the top of this Question Paper and on the OMR Sheet.

(ii) This Question Paper has 50 questions of **2** marks each. All questions are compulsory.

(iii) **A wrong answer will lead to the deduction of one-fourth (¼) of the marks assigned to that question.**

(iv) **Please darken the appropriate circle of 'Question Paper Series Code' and 'Programme Code' on the OMR Sheet in the space provided.**

(v)   All questions should be answered on the OMR Sheet.

(vi) Answers written inside the Question Paper will **NOT** be evaluated.

(vii) **Calculators and Log Tables may be used. Mobile Phones are NOT allowed.**

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

(ix) **Return the Question Paper and the OMR Sheet to the Invigilator at the end of the Entrance Test.**

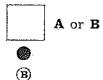(x)   **DO NOT FOLD THE OMR SHEET.**

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INSTRUCTIONS FOR MARKING ANSWERS ON THE 'OMR SHEET'

Use BLUE/BLACK Ballpoint Pen Only

1. **Please ensure that you have darkened the appropriate circle of 'Question Paper Series Code' and 'Programme Code' on the OMR Sheet in the space provided.**

   Question Paper Series Code

   Write Question Paper Series Code **A** or **B** in the box and darken the appropriate circle.

   ☐ **A or B**

   ⬤

   Ⓑ

2. Use only Blue/Black Ballpoint Pen to darken the circle. Do not use Pencil to darken the circle for Final Answer.

3. Please darken the whole circle. ⬤

4. Darken <u>ONLY ONE CIRCLE</u> for each question as shown below in the example :

   Example :

Wrong	Wrong	Wrong	Wrong	Correct
⬤ ⓑ ⓒ ⬤	ⓐ̸ ⓑ ⓒ ⓓ	ⓐ̸ ⓑ ⓒ ⓓ̸	⊙ ⓑ ⓒ ⬤	ⓐ ⓑ ⓒ ⬤

5. Once marked, no change in the answer is possible.

6. Please do not make any stray marks on the OMR Sheet.

7. Please do not do any rough work on the OMR Sheet.

8. Mark your answer only in the appropriate circle against the number corresponding to the question.

9. **A wrong answer will lead to the deduction of one-fourth of the marks assigned to that question.**

10. Write your six-digit Roll Number in small boxes provided for the purpose; and also darken the appropriate circle corresponding to respective digits of your Roll Number as shown in the example below.

    Example :

    ROLL NUMBER

1	3	5	7	2	0	2
⬤	①	①	①	①	①	①
②	②	②	②	⬤	②	⬤
③	⬤	③	③	③	③	③
④	④	④	④	④	④	④
⑤	⑤	⬤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⬤	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨
⓪	⓪	⓪	⓪	⓪	⬤	⓪

1. Which country in the South Asian Association for Regional Cooperation (SAARC) has the highest per capita income currently?

   a. India

   b. Pakistan

   c. Maldives

   d. Bhutan

2. Suppose a farmer in Pakistan is considering migrating to the city. He is currently earning a daily wage of 100 Pakistani rupees and is expecting a daily wage of 150 Pakistani rupees in the city. According to the Harris-Todaro model, he will

   a. stay back in agriculture as the wage differential is not substantial

   b. decide to divide his labour time between the rural and the urban sectors

   c. migrate to the city as the wage is higher there

   d. take a decision based on the probability of finding a job at the going wage rate in the city

3. Non-enforcement of private property rights over productive resources may create more employment and income opportunities but may lead to non-optimal use of resources. In the literature, this idea is referred to as the problem of

   a. adverse selection

   b. tragedy of commons

   c. knife-edge instability

   d. external diseconomies

4. The concept of inter-sectoral linkage is important for

   a. balanced growth models

   b. unbalanced growth models

   c. two-sector growth models

   d. all of the above

5. Disguised unemployment refers to a situation when

   a. workers are underpaid despite doing a full-time job

   b. workers are occupied on a full-time basis even though the services they render require less time

   c. the economy experiences underemployment equilibrium

   d. unemployment numbers revealed in official statistics do not incorporate some less productive sectors in the economy

6. Due to lack of availability of reliable income data, expenditure inequality is used as a proxy for measuring income inequality in many countries. However, the problem with this proxy is that

   a. expenditure inequality typically overestimates income inequality

   b. expenditure inequality typically underestimates income inequality

   c. expenditure data is even more unreliable than income data

   d. both a above and c

7. Suppose in a country the demand for food is exactly equal to the supply of food at a market-clearing price. In such a scenario

   a. the entire population of the country will receive adequate food

   b. the country may suffer from acute famine

   c. the country does not import any food

   d. none of the above

8. For a country, the head count ratio of income poverty was 28 percent in 2014. If the per capita income of the country grows annually by 5 percent for five years, then the head count ratio in 2019

   a. will decrease to 21 percent

   b. will decrease to less than 21 percent

   c. will decrease to 23 percent

   d. may increase, decrease or remain unchanged

9. According to the Prebisch-Singer thesis, if a country exports primary products and imports manufactured goods, in the long run it will experience

   a. a secular decline in its international terms of trade

   b. an initial increase followed by a decline in its international terms of trade

   c. a stagnant international terms of trade

   d. a secular increase in its international terms of trade

10. The Lewis model is considered to be a 'classical' model of development because

    a. the productivity of labour in the modern sector is higher than that in the traditional sector

    b. the supply of labour in the economy is determined by labour-leisure choice

    c. there is unlimited supply of labour available for the modern sector at a given wage rate

    d. all of the above

11. A weak preference relation R is called quasi-transitive iff the strict preference relation P is transitive. Four consumers a, b, c and d have preference relations over a triple x, y, z provided below. Which consumer's preference relation satisfies quasi-transitivity?

    a. xPy & yPz & zPx

    b. xIy & yIz & xPz

    c. xPy & yPz & xIz

    d. yPx & zPy & xPz

12. A consumer's utility function is given by $U = \max(x_1, x_2) + \min(x_1, x_2)$. Suppose the price of commodity 1 is \$4 and the price of commodity 2 is \$8. The consumer's income is \$40. This consumer will attain equilibrium at

    a. $(5, 0)$

    b. $(10, 0)$

    c. $(4, 3)$

    d. $(2, 4)$

13. Consider a Leontief production function $Q = \min(K/2, L/3)$ where the price of K is 3 and the price of L is 2. If the firm intends to produce 40 units, the cost minimizing (K, L) combination will be

    a. $(30, 40)$

    b. $(20, 30)$

    c. $(80, 120)$

    d. $(120, 80)$

14. Consider a pure exchange economy with two consumers A & B and two goods x & y. Suppose the total stock of x and y is 4 units each and each consumer has a utility function $U = x_i + y_i$, $i = A, B$. The set of Pareto optimal points will be

    a.   the diagonal of the Edgeworth box

    b.   the entire Edgeworth box

    c.   the horizontal axis of the Edgeworth box

    d.   the vertical axis of the Edgeworth box

15. If utility is defined over just two goods and one is an inferior good, then the other must be

    a.   a necessity good

    b.   a luxury good

    c.   another inferior good

    d.   none of the above

16. A risk-neutral person who maximizes expected utility would rank two contracts that respectively offer $A = \{90, 150\}$ and $B = \{150, 30\}$ equally if the respective probabilities p_1 and p_2 were

    a.   equal

    b. $p_1 = \dfrac{1}{3}, \; p_2 = \dfrac{2}{3}$

    c. $p_1 = \dfrac{2}{3}, \; p_2 = \dfrac{1}{3}$

    d.   none of the above

17. Any Pareto efficient allocation (consider strictly quasi-concave preferences) can be a competitive equilibrium (pure exchange model) if

    a.   each maximises utility

    b.   each obeys own budget constraint

    c.   the endowment point can be suitably modified

    d.   Walras' law holds

18. For a monopolist, the demand curve is $q = \dfrac{200}{p}$ and cost curve is $c(q) = q^2$. The optimal level of output for the monopolist is

   a. $q = 100$

   b. $q = 50$

   c. $q = 10$

   d.   None of the above

19. The own price elasticity of demand for a commodity is 1·5. A drop in the price of the commodity from \$3·00 to \$2·80 would result in

   a.   an increase in sales by 15%

   b.   a decrease in sales by 10%

   c.   an increase in sales by 10%

   d.   no effect on sales

20. There are only two price-taking firms in a market. Their cost functions are $C_1 = x_1^2$ and $C_2 = 3x_2^2$, where x_i is the output of the i-th firm. If the market supply is the sum of the two firms' outputs, then the market supply function is

   a. $x = 2p$

   b. $x = \dfrac{2}{3}p$

   c. $x = \dfrac{3}{2}p$

   d. $x = \dfrac{p}{2}$

21. Suppose a person lives for two periods. His current period income is ₹ 42,000 and he possesses an asset worth ₹ 18,000. His future income is expected to be ₹ 33,000 and the real rate of interest at which he can borrow or save is 10 percent. His current and future maximum consumptions will be

   a.   ₹ 90,000 and ₹ 99,000

   b.   ₹ 42,000 and ₹ 33,000

   c.   ₹ 75,000 in both the periods

   d.   ₹ 60,000 and ₹ 51,000

22. If the Phillips curve relation is given by $\pi_t - \pi_{t-1} = -0\cdot8(u_t - 6\cdot5\%)$, then the sacrifice ratio will be

   a.   0·8

   b.   1·25

   c.   6·5

   d.   7·5

Direction : Question Nos. **23** and **24** are based on the following information.

Consider an economy where the nominal wage rate is set by a process of wage bargaining between the workers and the producers before actual production takes place. As an outcome of this process of bargaining, in any period t, the nominal wage rate, W_t is a function of the expected price level, P_t^e, the rate of unemployment, u_t (representing the relative bargaining power of the workers vis-à-vis the employers) and the average productivity of the workers, A_t, i.e., $W_t = P_t^e F(u_t, A_t)$; $F_u < 0$, $F_A > 0$. Once the nominal wage is determined, the producers set the actual price level, P_t as a constant markup μ over the nominal wage rate, $P_t = (1 + \mu) W_t$. The actual rate of inflation is defined as $\pi_t = \dfrac{P_t - P_{t-1}}{P_{t-1}}$ and the expected rate of inflation as $\pi_t^e = \dfrac{P_t^e - P_{t-1}}{P_{t-1}}$.

23. From the above wage and price setting equations, which one of the following equations represents the relationship between the expected rate of inflation and the actual rate of inflation?

    a. $\pi_t = \pi_t^e (1 + \mu) F(u_t, A_t)$

    b. $\pi_t = (1 + \pi_t^e)(1 + \mu) F(u_t, A_t) - 1$

    c. $\pi_t = (1 + \pi_t^e)[F(u_t, A_t) - \mu] - 1$

    d. None of the above

24. Suppose the average productivity of the workers remains constant at a level $\overline{A}$. Given the relationship in your answer to the previous question, the 'natural rate of unemployment' is given by

    a. $F(u_t, \overline{A}) = \mu$

    b. $F(u_t, \overline{A}) = \dfrac{1}{1 + \mu}$

    c. $F(u_t, \overline{A}) = \dfrac{\mu}{1 + \mu}$

    d. none of the above

25. If the agents formulate their expectations according to the adaptive expectation hypothesis, under which of the following circumstances are they most likely to make systematic errors?

    a. When prices are constant

    b. When prices fluctuate randomly

    c. When prices depend only on the monetary policy of the central bank which is announced beforehand

    d. When prices depend only on the monetary policy of the central bank which is not announced beforehand

26. Suppose the following bilateral spot exchange rates are being quoted for the Afghan Afghani (AFN), Bangladeshi Taka (BDT) and Maldivian Rufiyaa (MVR) :

$$BDT/MVR = 5\cdot26$$
$$AFN/MVR = 4\cdot54$$
$$AFN/BDT = 0\cdot88$$

If you start with 100 MVR, the most you could end up with (in MVR) in a single round of trilateral arbitrage would be

a. 93·33

b. 98·08

c. 101·96

d. 102·67

Direction : Question Nos. 27 and 28 are based on the following information.

Consider an economy where the aggregate output is produced by using two factors K and L using a production function $Y = K^{\alpha}L^{1-\alpha}$. At every point of time, both the factors are fully employed. A constant proportion s of total output is saved and automatically invested at each point in time, leading to augmentation of capital stock. However, the capital is also subjected to depreciation at a rate δ. Labor force grows at a constant rate n.

27. The steady-state level of per capita output will be given by

a. $s\left(\dfrac{K}{L}\right)^{\alpha} - (n+\delta)\dfrac{K}{L}$

b. $\left(\dfrac{s}{n+\delta}\right)^{\frac{1}{1-\alpha}}$

c. $\left(\dfrac{s}{n+\delta}\right)^{\frac{\alpha}{1-\alpha}}$

d. Cannot be determined from the given information

28. The optimal savings rate which will maximize the per capita consumption level at the steady state will be given by

a. α

b. $n+\delta$

c. $\alpha(n+\delta)$

d. $\left(\dfrac{s}{n+\delta}\right)^{\frac{1}{1-\alpha}}$

29. Suppose in a competitive goods market output is produced by using only labor such that $Y = f(L) \cdots (1)$. The wage paid to labor is equivalent to last year's price of Y, i.e., $W = aP_{t-1} \cdots (2)$, where $a > 0$. Since the goods market is competitive, employment is determined at the point where marginal product of labor is equal to real wage, i.e., when $F'(L) = \dfrac{W}{P} \cdots (3)$. Substituting (2) in (3), we have $F'(L) = \dfrac{aP_{t-1}}{P}$ which after some manipulation gives $F'(L) = \dfrac{a}{1+\pi} \cdots (4)$, where π is the inflation rate. The relation (4) implies

   a. a permanent unemployment inflation trade-off

   b. no trade-off between unemployment and inflation

   c. that the unemployment inflation trade-off exists only in the short run

   d. that nothing can be said about the relation between employment and inflation rate

30. In November 2016, the Government of India announced the withdrawal of legal tender status of INR 500 and 1000 notes, constituting around 86 percent by the value of total cash in India. People were given a window of about two months to deposit the old delegalized currency notes in the banks. This was coupled with strict limits on cash withdrawal, so that the amount of cash one could withdraw from the banks was restricted. Assuming that there is no additional policy intervention to influence the rate of interest, the effect of this on the interest rates is likely to be

   a. an increase in the rate of interest in the short run followed by a decrease in the long run once the withdrawal limits are removed

   b. a decrease in the rate of interest in the short run followed by an increase in the long run once the withdrawal limits are removed

   c. an increase in the rate of interest in both the short run and long run

   d. a decrease in the rate of interest in both the short run and long run

31. If A, B and D are three events such that $\Pr(A \cup B \cup D) = 0.7$, then what is the value of $\Pr(A^C \cap B^C \cap D^C)$?

   a. 0.2

   b. 0.3

   c. 0.7

   d. 0.4

32. If A and B are disjoint events and $\Pr(B) > 0$, then what is the value of $\Pr(A|B)$?

   a. $\Pr(A)$

   b. 1

   c. 0

   d. Cannot be determined with the given information

33. If A is an event such that $\Pr(A) = 0$ and B is any other event, then which one of the following statements is true?

   a. A and B are independent

   b. A and B cannot be independent

   c. A and B are disjoint events

   d. None of the above

34. Suppose that 10000 tickets are sold in one lottery and 5000 tickets are sold in another lottery. If a person owns 100 tickets in each lottery, what is the probability that she will win at least one first prize?

   a. 0·0537

   b. 0·0122

   c. 0·0091

   d. 0·0298

35. Suppose that A, B and C are three independent events such that $\Pr(A) = \dfrac{1}{4}$, $\Pr(B) = \dfrac{1}{3}$ and $\Pr(C) = \dfrac{1}{2}$. The probability that exactly one of these three events will occur is

   a. $\dfrac{16}{11}$

   b. $\dfrac{1}{2}$

   c. $\dfrac{11}{24}$

   d. $\dfrac{17}{24}$

36. If A and B are independent events such that $\Pr(A) = \dfrac{1}{3}$ and $\Pr(B) > 0$, what is the value of $\Pr(A \cup B^C \mid B)$?

   a. $\dfrac{1}{3}$

   b. 0

   c. $\dfrac{2}{3}$

   d. Cannot be determined from the given information

37. If the events A and B are disjoint and each has positive probability, then

a. A and B are independent

b. A and B may or may not be independent

c. A and B are necessarily dependent

d. we need more information to ascertain independence

38. If a random variable X has a discrete distribution with the p.f.

$$f(x) = \begin{cases} \dfrac{c}{2^x}, & x = 0, 1, 2, \cdots \\ 0, & \text{otherwise} \end{cases}$$

the value of the constant c is

a. 1

b. 2

c. $\dfrac{4}{7}$

d. $\dfrac{1}{2}$

39. Three different machines, M_1, M_2 and M_3 were used to produce a large batch of similar manufactured items. Suppose that 20 percent of the items were produced by machine M_1, 30 percent by machine M_2 and 50 percent by machine M_3. Suppose further that 1 percent of the items produced by machine M_1 are defective, that 2 percent of the items produced by machine M_2 are defective and that 3 percent of the items produced by machine M_3 are defective. Finally, suppose that one item is selected at random from the entire batch and it is found to be defective. The probability that this item was produced by machine M_2 is

a. 0·45

b. 0·34

c. 0·12

d. 0·26

40. Consider the following statements :

(i) The centre of a confidence interval is a population parameter.

(ii) The bigger the margin of error, the smaller is the confidence interval.

(iii) The confidence interval is a type of point estimate.

(iv) A population mean is an example of a point estimate.

Which one of the above is/are true?

a. (i) and (iv) only

b. (ii) only

c. (iii) only

d. None of the above

41. Assume that B is a 3×3 matrix with the property that $B^2 = B$. Which one of the following statements about the matrix B must be true?

    a. B is invertible

    b. $\det(B) = 0$

    c. $\det(B^5) = \det(B)$

    d.   None of the above

42. A set of 3 vectors in $\mathscr{R}^4$ cannot be linearly independent.

    a.   True

    b.   False

    c.   Depends on the set of vectors one is looking at

    d.   None of the above

43. $\lim\limits_{x \to 0^-} \left(\dfrac{x + |x|}{x} \right)$ and $\lim\limits_{x \to 0^+} \left(\dfrac{x + |x|}{x} \right)$ would be respectively

    a.   0 and 2

    b.   0 and 0

    c.   2 and 2

    d.   2 and 0

44. If f and g are continuous at a, then which of the following is not true?

    a. $f + g$ is always continuous at a

    b. $f - g$ is always continuous at a

    c. fg is always continuous at a

    d. f/g is always continuous at a

45. If f is defined on $[0, 1]$ by $f(x) = 2x^2 - x^4$, then the range of f is

    a. $(0, 1)$

    b. $[0, 1]$

    c. $\left(\dfrac{1}{2}, 1 \right)$

    d. $\left[\dfrac{1}{2}, 1 \right]$

46. Differentiating $\dfrac{e^x}{x}$ with respect to x, we obtain

a. $\dfrac{e^x}{x}$

b. $\dfrac{e^x}{x^2}$

c. $\dfrac{e^x(x-1)}{x}$

d. $\dfrac{e^x(x-1)}{x^2}$

47. The elasticity of $y = x^3 e^{2x}$ is

a. $3 + e^x$

b. $3 + x$

c. $3 + e^{2x}$

d. $3 + 2x$

48. If the function $y = AK^\alpha$ for $A > 0$ and $0 < a < 1$ is defined for all K, then y is

a. strictly convex

b. strictly concave

c. quasi-convex

d. quasi-concave

49. The area under the parabola $f(x) = x^2$ over the interval $[0, 1]$ is

a. 1

b. $\dfrac{1}{2}$

c. $\dfrac{1}{3}$

d. $\dfrac{1}{4}$

50. The rank of the matrix

$$\begin{pmatrix} 5-x & 2 & 1 \\ 2 & 1-x & 0 \\ 1 & 0 & 1-x \end{pmatrix}$$

for $x = 6$ is

a. 1

b. 2

c. 3

d. 0

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