

SXUK MA ECONOMICS

Topic: - MA ECO_Gr. A

1) According to the Cournot model, a firm will: -

1. Assume that rival firm keep its production constant.
2. Produce quantity where Marginal Revenue=Marginal Cost
3. React to changes in the production of rival firms
4. All the options are true.

Correct Answer: -

All the options are true.

2) In an Edgeworth box: -

1. All the points are pareto efficient.
2. Pareto efficiency requires marginal rate of substitution (MRS) of all the producers to be equal.
3. Consumers should be trading until their MRS are equal.
4. All the options are true.

Correct Answer: -

Consumers should be trading until their MRS are equal.

3) Contract curve shows: -

1. All pareto-efficient allocations of goods between two consumers.
2. In Pareto efficient allocations marginal rate of substitution (MRS) of all the producers are equal.
3. All pareto-inefficient allocations of goods between two producers.
4. None of these.

Correct Answer:-

All pareto-efficient allocations of goods between two consumers.

4) In a pure exchange economy: -

1. Producers are trading goods with consumers.
2. Consumers are trading goods among themselves.
3. Producers are trading goods among themselves.
4. None of these.

Correct Answer: -

Consumers are trading goods among themselves.

5) One of the essential conditions of monopolistic competition is: -

1. Firms are selling homogeneous products.
2. Product differentiation prevails in market.
3. Many buyers but one seller of products.
4. One buyer and many sellers.

Correct Answer: -

Product differentiation prevails in market.

6) In the context of Oligopoly,

1. Cournot equilibrium is a Nash equilibrium.
2. Stackelberg equilibrium is a Nash equilibrium.
3. Both the given options are true.
4. Nash equilibrium does not occur.

Correct Answer: -

Both the given options are true

7) In equilibrium, the value of marginal product in a perfectly competitive labor market: -

1. Is equal to marginal revenue product of labor.
2. Is equal to market price level of output.
3. Is equal to marginal product of labor.
4. Is more than wage rate.

Correct Answer: -

Is equal to marginal revenue product of labor.

8) The short-run total cost of production of a firm is $STC(Q) = 40 + 10Q + 0.1Q^2$, where Q is the quantity sold by firm per day. The prevailing market price is \$20 per unit sold. What is the maximum daily profit of the firm?

1. 250 unit
2. 200 unit
3. 210 unit
4. 2100 unit

Correct Answer: -

210 unit

9) Consider a production function whose equation is given by the formula $Q = L^{1/2}K^{1/2}$, where Q is the output level and L and K are labor and capital used in the production process respectively.

Elasticity of substitution for the production function is: -

1. Constant
2. 0

3. 1

4. Infinite

Correct Answer: -

1

10) In the third stage of law of variable proportion,

1. Average product diminishes and marginal product increases.

2. Average product increases and marginal product diminishes.

3. Both average product and marginal product increase.

4. Marginal product is negative.

Correct Answer: -

Marginal product is negative.

11) Deficit Financing means that the government borrows money from the: -

1. Revenue Department

2. State Bank of India

3. World Bank

4. Reserve Bank of India

Correct Answer: -

Reserve Bank of India

12) Under the Real Business Cycle model, business cycles are caused by: -

1. imperfect information in the economy

2. imperfectly complete market

3. technological shock in the economy

4. none of these

Correct Answer: -

technological shock in the economy

13) Which sector in the Indian economy employs the largest section of the employed?

1. Agriculture

2. Manufacturing

3. Retail trade

4. Other Services

Correct Answer: -

Agriculture

14) The utility that Rekha receives by consuming goods A and B is expressed by the utility function, $U(A, B) = \text{Min}(A, B)$. A and B are: -

1. Perfect complementary goods
2. Perfect substitute goods
3. Public goods
4. Giffen goods

Correct Answer: -

Perfect complementary goods

15) If the value of Tobin's 'q' is greater than one. This implies: -

1. Market value of a project is less than the replacement cost of capital.
2. Market value of a project is greater than the replacement cost of capital.
3. No further Investment will be made for the project.
4. None of these.

Correct Answer: -

Market value of a project is greater than the replacement cost of capital.

16) The price of petrol in India is increasing because: -

1. Excise and customs duties on petroleum in India is high
2. International oil prices are rising
3. Both option 1 and option 2
4. Only Option 2

Correct Answer: -

Both option 1 and option 2

17) In a deflationary period; the appropriate Central Bank's policy would be: -

1. Buy government's securities in open market.
2. Increase Cash Reserve Ratio.
3. Increase bank rate.
4. Discourage commercial banks to create loans.

Correct Answer: -

Buy government's securities in open market.

18) An Indian firm's revenue operating in China will be part of: -

1. China's GNP
2. India's GDP
3. India's GNP
4. None of these

Correct Answer: -

India's GDP

19) The demand for holding cash is directed by: -

1. Transaction motive
2. Speculative motive
3. Precautionary motive
4. All of these

Correct Answer: -

All of these

20) At a given point time if the economy experiences insufficient demand for investment than the amount of fund available for loan; the financial institution will: -

1. charge lower rate of interest.
2. charge higher rate of interest.
3. will keep the rate of interest unchanged.
4. none of these.

Correct Answer: -

charge lower rate of interest.

21) The long run supply curve in a perfectly competitive industry is,

1. Upward sloping for decreasing cost industry
2. Horizontal for increasing cost industry
3. Downward sloping for increasing cost industry
4. Downward sloping for decreasing cost industry

Correct Answer: -

Downward sloping for decreasing cost industry.

22) The policy ineffective proposition of the monetary policy suggests that an increase in anticipatory component of money supply will keep the real output unchanged. The statement assumed agents have: -

1. expectation in adaptive nature
2. rational expectation
3. irrationality in expectation
4. none of these.

Correct Answer: -

rational expectation

23) In the third stage of law of variable proportion,

1. Average product diminishes and marginal product increases
2. Average product increases and marginal product diminishes
3. Both average product and marginal product increase
4. Marginal product is negative

Correct Answer:-

Marginal product is negative.

24) Involuntary unemployment is a result of?

1. Wage price flexibility.
2. Wage rigidity.
3. Deficiency of aggregate demand.
4. Price fixity.

Correct Answer:-

Deficiency of aggregate demand

25) Consider the least squares regression of y on a single variable x . Which of the following statements is true about such a regression?

1. The coefficient of determination R^2 is always equal to the squared correlation coefficient between y on x
2. The coefficient of determination R^2 is equal to the squared correlation coefficient between y on x only if there is no intercept in the equation.
3. The coefficient of determination R^2 is equal to the squared correlation coefficient between y on x only if there is an intercept in the equation
4. There is no relationship between the coefficient of determination R^2 and the squared correlation coefficient between y on x

Correct Answer :-

The coefficient of determination R^2 is equal to the squared correlation coefficient between y on x only if there is an intercept in the equation.

26) Heteroscedasticity may arise due to various reasons. Which one of these is NOT a reason: -

1. Extremely low or high values of X and Y coordinates in the dataset
2. Incorrect specification of the functional form of the model [Option ID = 53784]
3. Incorrect transformation of variables [Option ID = 53785]
4. Correlation of variables over time [Option ID = 53786]

Correct Answer:-

Correlation of variables over time

27) If y is regressed on its own past values, then the presence of autocorrelated error structure leads to: -

1. Unbiased and consistent estimation
2. Biased but consistent estimation
3. Biased and inconsistent estimation
4. Inefficient estimation

Correct Answer: -

Biased and inconsistent estimation

28) Omission of relevant variable leads to:-

1. Biased estimation of the parameters
2. Unbiased estimation of the parameters
3. Can't Say
4. Depends

Correct Answer :-

Biased estimation of the parameters

29) What is the interpretation for Variance inflating factor?

1. It is the ratio between R^2 of the original model and R^2 of the model with one variable dropped
2. It is the ratio of actual variance of the estimated coefficient and what the variance would have been if the corresponding explanatory variable is uncorrelated with the rest of the variables
3. Can't Say
4. Depends

Correct Answer :-

It is the ratio of actual variance of the estimated coefficient and what the variance would have been if the corresponding explanatory variable is uncorrelated with the rest of the variables

30) Multicollinearity is removed if log of the variable is taken:-

1. Yes
2. No
3. Can't Say
4. Depends

Correct Answer :-

No

31) If the error terms in a linear regression model is not normally distributed, then

1. This leads to changes in the distribution of the coefficients
2. This leads to changes in the statistical inferences of the coefficients

3. Both of the options
4. Depends

Correct Answer :-

Both of the options

32) Correct specification of the functional form of the explanatory variable to be used can be obtained by

1. Durbin Watson test
2. Ramsey-RESET test
3. Cochren-Orchutt test
4. None of these

Correct Answer :-

Ramsey-RESET test

33) Consideration of mod function in method least square as the loss function: -

1. Is not applicable as mod function is piece-wise continuous
2. Is not applicable as mod function is not differentiable
3. Both of the options
4. Depends

Correct Answer :-

Both of the options

34) Light house is an example of:-

1. Public good
2. Private good
3. Club good
4. Merit good

Correct Answer :-

Public good

35) In Solow -Swan growth model at steady state: -

1. growth rate of output is proportional to the growth rate of labour.
2. rate of growth of capital is equal to the growth rate of labour
3. output per unit of labour is constant
4. all of these

Correct Answer :-

all of these

36) With adaptive price expectations, the shape of the Phillips curve is?

1. Vertical in the short-run and horizontal in the long run
2. Vertical in the long-run and horizontal in the short run
3. Negatively sloped in the short-run and vertical in the long run
4. Negatively sloped in the long-run and vertical in the short run

Correct Answer :-

Negatively sloped in the short-run and vertical in the long run

37) Which of the following proposition is True?

1. An ongoing increase in money supply will lead to both nominal and real depreciation of home currency
2. An ongoing increase in money supply will lead to both nominal and real appreciation of home currency
3. An ongoing increase in money supply will lead to only nominal depreciation of home currency but the real exchange rate remains unchanged
4. An ongoing increase in money supply will lead to only nominal appreciation of home currency but the real exchange rate remains unchanged

Correct Answer :-

An ongoing increase in money supply will lead to only nominal depreciation of home currency but the real exchange rate remains unchanged.

38) Consider Mundell-Fleming model under flexible exchange rate and perfect capital mobility.

An increase in foreign interest rate leads to:-

1. increase in output
2. decrease in output
3. unchanged output
4. ambiguous effect on output

Correct Answer :-

increase in output.

39) The J-curve describes the following phenomenon:-

1. A change in nominal exchange rates will affect relative prices only in the short run but the effect will peter out in the long run
2. Depreciation of the domestic currency will worsen the trade balance in the short run but will then gradually improve later as volume effects come to dominate
3. An appreciation of the domestic currency will always worsen the trade balance
4. An increase in price level will reduce the aggregate demand only in the short but the effect will peter out in the long run

Correct Answer :-

Depreciation of the domestic currency will worsen the trade balance in the short run but will then gradually improve later as volume effects come to dominate.

40) Consider a Mundell-Fleming model with fixed exchange rate. Devaluation of home currency will increase the domestic output under: -

1. No capital mobility
2. Imperfect capital mobility
3. Perfect capital mobility
4. All of these

Correct Answer :-

All of these

41) Consider Mundell-Fleming model with fixed exchange rate and full capital mobility. An imposition of import restriction will: -

1. Increase the output
3. Decrease the output
5. Output remains unchanged
7. Nothing can be said

Correct Answer :-

Increase the output

42) Consider an AD-AS model with rigid wage. A wage cut will:-

1. Increase output
2. Reduce output
3. Output remains unchanged
4. Nothing can be said

Correct Answer :-

Increase output

43) If real balance effect is present, the AD curve is:-

1. Downward sloping
2. Vertical
3. Horizontal
4. Positively sloped

Correct Answer :-

Downward sloping

44) If demand for money is infinitely interest inelastic, the AD curve will be:-

1. Downward sloping
2. Vertical
3. Horizontal
4. Positively sloped

Correct Answer :-

Downward sloping

45) If investment is interest inelastic, the AD curve will be:-

1. Downward sloping
2. Vertical
3. Horizontal
4. Positively sloped

Correct Answer :-

Vertical

46) Which of the following statement is True:-

1. Using Shephard's lemma, we find Hicksian demand function from expenditure function
2. Using Shephard's lemma, we find Marshallian demand function from expenditure function
3. Shephard's lemma we find expenditure function from Hicksian demand function
4. None of these

Correct Answer :-

Using Shephard's lemma, we find Hicksian demand function from expenditure function

47) The compensated demand function of a good is:-

1. function of prices only
2. function of prices and money income
3. function of prices and utility level
4. none of these

Correct Answer :-

function of prices and utility level

48)

Consider the utility function $U = \sqrt{X^3 + Y^3}$. Which of the following statement is True

1. U is not a homogeneous function
2. U is homogeneous of degree 1
3. U is homogeneous of degree 3
4. U is homogeneous of degree 3/2

Correct Answer :-

U is homogeneous of degree 3/2

49) Income measure of poverty is/are:-

1. a) Human development index
2. b) Watt's Index
3. c) Foster-Greer-Thorbecke Index
4. d) Both (b) and (c) are true

Correct Answer :-

d) Both (b) and (c) are true

50) The inequality measurement principle(s) followed by Gini-coefficient is/are:-

1. The anonymity principle
2. The population principle
3. The Pigou-Dalton Transfer Principle
4. All of the options are true

Correct Answer :-

All of the options are true

Topic: - MAECO_Gr. B

1)

Suppose in a social media M-book there are total five individuals namely A, B, C, D and E. Consider the following matrix

	A	B	C	D	E
A	0	0	1	1	1
B	0	0	0	1	1
C	1	0	0	1	0
D	1	1	1	0	0
E	1	1	0	0	0

In this matrix 1 denotes the column individual is a friend of row individual and 0 denotes the column individual is not a friend of row individual. For example, C, D and E are friend of A but B is not. Now call the matrix

$$F = \begin{bmatrix} 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 \end{bmatrix}, \text{ we will get number of total friends of any individuals from the}$$

1. Diagonal elements of the matrix F^2
3. Off-diagonal elements of the matrix F^2
3. Diagonal elements of the matrix F^3
4. Off-diagonal elements of the matrix F^3

Correct Answer :-

Off-diagonal elements of the matrix F^2

2)

If $y = f(x_1, x_2) = g(x_1 - x_2)$. Let $u = x_1 - x_2$ then

1.

$$\frac{\partial y}{\partial u} = \frac{\partial y}{\partial x_1} = \frac{\partial y}{\partial x_2}$$

2.

$$\frac{\partial y}{\partial u} = \frac{\partial y}{\partial x_1} = -\frac{\partial y}{\partial x_2}$$

3.

$$\frac{\partial y}{\partial u} = -\frac{\partial y}{\partial x_1} = \frac{\partial y}{\partial x_2}$$

4.

$$-\frac{\partial y}{\partial u} = \frac{\partial y}{\partial x_1} = \frac{\partial y}{\partial x_2}$$

Correct Answer :-

$$\frac{\partial y}{\partial u} = \frac{\partial y}{\partial x_1} = -\frac{\partial y}{\partial x_2}$$

3) The optimization problem $\text{Max}_{x,y} \text{Min}\{x,y\}$ Sub to $x+y < A$ and $x,y \geq 0$ where $A \geq 0$ has a unique solution at:-

1. $x=A, y=0$

2. $x=A, y=A$

3. $x=y=A/2$

4. $x=0, y=A$

Correct Answer :-

$x=y=A/2$

4)

The function $f(x) = \begin{cases} x^2 + 2 & \forall x \geq 0 \\ x + 2 & \forall x < 0 \end{cases}$ is

1. A quasi-concave
2. A quasi-convex
3. Both quasi-concave and quasi-convex
4. Neither quasi-concave nor quasi-convex

Correct Answer :-

Both quasi-concave and quasi-convex

5)

The function $f(x) = (x-a)^n$ for $n=2,3,\dots,\infty$ always have a:-

1. Critical point at $x=a$
2. Minimum point at $x=a$
3. Maximum point at $x=a$
4. Inflection point at $x=a$

Correct Answer :-

Critical point at $x=a$

6) The value function of the problem $Max_{x_1, \dots, x_n \geq 0} \prod_{i=1}^n x_i$ Subject to, $\sum_{i=1}^n x_i = n$ is

1. Increasing in n
2. Decreasing in n
3. Independent of n
4. None of these

Correct Answer :-

Independent of n

7)

If the function $f(x) = \left| x - \frac{a+b}{2} \right| + \left| x - \frac{a-b}{2} \right|$ where $a > b > 0$ has kink at $x=5$ and $x=2$ then

1. $a=7, b=3$
2. $a=3, b=7$
3. $a=5, b=5$
4. $a=0, b=10$

Correct Answer :-

$a=7, b=3$

8) If two vector \vec{v}_1 and \vec{v}_2 are orthogonal to each other then the angle between \vec{v}_1 and \vec{v}_2 is

1. $\pi/4$
2. 0
3. $\pi/2$

4. π

Correct Answer :-

$\pi/2$

9) The cumulative density function of a discrete random variable is: -

1. Right continuous
2. Continuous
3. Left-Continuous
4. Can't Say

Correct Answer :-

Right continuous

10) If all the values are of equal importance, the index numbers are called:-

1. Unweighted
2. Weighted
3. Value Index
4. Composite

Correct Answer :-

Unweighted

11) The power of test statistics should be larger when:-

1. Type-II error becomes larger
2. The sample size is larger
3. The null hypothesis becomes closer to be true
4. Depends

Correct Answer :-

The sample size is larger

12) Given IQ scores are approximately normally distributed with a mean of 100 and standard deviation of 15, the proportion of people with IQs above 130 is:-

1. 95%
2. 68%
3. 5%
4. 2.50%

Correct Answer :-

2.50%

13) Randomly assigning treatment to experimental units allows:-

1. population inference

2. causal inference
3. both types of inference
4. neither type of inference

Correct Answer :-
causal inference

14) The cumulative density function of a discrete random variable is:-

1. Smooth function
2. Increasing Function
3. Step-like function
4. Can't Say

Correct Answer :-
Step-like function

15) Additive model for time series $Y = . .$

1. $T \times S \times C \times I$
2. $T - S - C - I$
3. $T + S + C + I$
4. $T/S \times S/C \times C/I$

Correct Answer :-
 $T + S + C + I$

16) Assumptions underlying ANOVA:-

- (i) Normality
- (ii) Homogeneity
- (iii) Additivity and
 1. Independence etc.
 2. Interaction etc.
 3. Correlation.
 4. Regression.

Correct Answer :-
Independence etc.

17) Which index number is called as ideal index number?

1. Lasperys
2. Paasches
3. Fisher

4. None of these

Correct Answer :-

Fisher

18) Which of the fertility rates have midyear population as denominator?

1. crude birth rate
2. general fertility rate
3. general marital fertility rate
4. all of these

Correct Answer :-

all of these

19) A rise in prices before any festival is an example of:-

1. Seasonal Trend
2. Cyclical Trend
3. Secular Trend
4. Irregular Trend

Correct Answer :-

Seasonal Trend

20) The presence of measurement error in the dependent variable leads to:-

1. Unbiased and consistent estimation
2. Biased but consistent estimation
3. Biased and inconsistent estimation
4. Inefficient estimation

Correct Answer :-

Unbiased and consistent estimation

21) The condition that the roots of the equation $x^3 - px^2 + qx - r = 0$ will be A.P. if:-

1. $p^3 - 9pq + 27r = 0$
2. $2p^3 + 9pq + 27r = 0$
3. $p^3 - 9pq - 27r = 0$
4. $2p^3 - 9pq + 27r = 0$

Correct Answer :-

$2p^3 - 9pq + 27r = 0$

22) If $f(x+1) - 2f(x) + f(x-1) = 2$ for all x , then:-

1. $f(x)=x^2$
2. $f(x)=x^3$
3. $f(x)=x$
4. $f(x)=-x$

Correct Answer :-

$$f(x)=x^2$$

23)

Given $F(x)=\sqrt[3]{\sqrt{x}-1}$, if $F=f\circ g\circ h$ then

1. If $g(x) = f(x^2)$, where f is twice differentiable for all x , $f'(x) > 0$ for all $x \neq 0$, and f is concave downward on $(-\infty, 0)$ and concave upward on $(0, \infty)$ then which one of the following is true?

2. $f(x)=x-1$, $g(x)=\sqrt[3]{x}$ and $h(x)=\sqrt{x}$

3. $f(x)=\sqrt[3]{x}$, $g(x)=x-1$ and $h(x)=\sqrt{x}$

4. $f(x)=\sqrt[3]{x}$, $g(x)=\sqrt{x}$ and $h(x)=x-1$

Correct Answer :-

$$f(x)=\sqrt[3]{x}, g(x)=x-1 \text{ and } h(x)=\sqrt{x}$$

24)

1.

$$\frac{c+a-b}{2}$$

2.

$$\frac{c+b-a}{2}$$

Let a, b, c be real numbers. Consider the function $f(x_1, x_2) = \min\{a - x_1, b - x_2\}$. Let (x_1^*, x_2^*) be the solution to the maximization problem $\max f(x_1, x_2)$ subject to $x_1 + x_2 = c$. Then $x_1^* - x_2^*$ equals

4. $b-a$

Correct Answer :-

$a-b$

25)

1. $g(x)$ is maximized at $x=0$ and $g(x)$ is convex.
2. $g(x)$ is minimized at $x=0$ and $g(x)$ is convex.
3. $g(x)$ is maximized at $x=0$ and $g(x)$ is concave.
4. $g(x)$ is minimized at $x=0$ and $g(x)$ is concave

Correct Answer :-

$g(x)$ is minimized at $x=0$ and $g(x)$ is convex.

26) The area of the largest rectangle that can be inscribed in a semicircle of radius r is:-

1. $r^2/2$
2. $r^2/3$
3. r^2
4. $2r^2$

Correct Answer :-

r^2

27) The confidence interval constructed for β will be same irrespective of the sample analyzed:-

1. This statement is true
2. This statement is false
3. Can't Say
4. Depends

Correct Answer :-

This statement is false

28) For two sets A & B , which of the following statement is TRUE?

1.

$$[(A^c \cup B^c)^c \cup (A^c \cup B)^c] = B$$

2.

$$[(A^c \cup B^c)^c \cup (A^c \cup B)^c] = A$$

3.

$$[(A^c \cup B^c)^c \cup (A^c \cup B)^c] = \emptyset$$

4. None of these are True

Correct Answer :-

$$[(A^c \cup B^c)^c \cup (A^c \cup B)^c] = A$$

29) For two sets A & B , which of the following statement is TRUE?

1.

$$(A \cup B) \cap (A \cap B)^c = (A \cap B^c) \cup (B \cap A^c)$$

2.

$$(A \cup B) \cup (A \cap B)^c = (A \cap B^c) \cup (B \cap A^c)$$

3. Both (a) and (b) are True

4. None of these are True

Correct Answer :-

$$(A \cup B) \cap (A \cap B)^c = (A \cap B^c) \cup (B \cap A^c)$$

30) If $P(A) = P(B) = P(A \cap B)$, then $P\{(A \cap B^c) \cup (B \cap A^c)\} = ?$

1. 0

3. 1

5. $1/2$

7. None of these

Correct Answer :-

0

31)

If $A \subset B$, $P(A) = 1/4$, $P(B) = 1/3$. Which of the following statement is True?

1. $P(A|B) > P(B|A)$

2. $P(A|B) < P(B|A)$

3. $P(A|B) = P(B|A)$

4. Insufficient information

Correct Answer :-

$$P(A|B) < P(B|A)$$

32) If there are no economists that aren't social scientists and no statisticians that aren't economists, then which of the following statement is always true?

1. All social scientists are statisticians

2. All statisticians are social scientists

3. Any social scientist is also an economist

4. None of these

Correct Answer :-

All statisticians are social scientists

33) Box 1 contains 1 white and 999 red balls. Box 2 contains 1 red and 999 white balls, A ball is picked from a randomly selected box. If the ball is red what is the probability that it came from

box 1?

1. 0.4
2. 0.9
3. 0.6
4. 0.2

Correct Answer :-

0.9

34) A bowl contains 5 chips, 3 marked \$1 and 2 marked \$4. A player draws 2 chips at random and is paid the sum of the values of the chips. The player's expected gain (in \$) is:-

1. less than 2
2. 3
3. above 3 and less than 4
4. above 4 and less than 5

Correct Answer :-

above 4 and less than 5

35) Consider two disjoint events A and B in a sample space S. Which of the following is correct?

1. A and B are always independent
2. A and B cannot be independent
3. A and B are independent if exactly one of them has positive probability
4. A and B are independent if both of them have positive probability

Correct Answer :-

A and B are independent if exactly one of them has positive probability

36) If random variables X and Y are independent and $E(X) = 0$, $E(Y) = 5$, $V(X) = 10$, then $\text{Cov}(X, X-Y)$ is:-

1. 0
2. 5
3. 10
4. -5

Correct Answer :-

0

37) Which of the following statement is True?

1. Matrix multiplication is associative (i.e. $(AB)C = A(BC)$) and commutative (i.e. $AB = BA$)
2. Matrix multiplication is associative but not commutative
3. Matrix multiplication is neither associative nor commutative
4. Matrix multiplication is not associative but commutative

Correct Answer :-

Matrix multiplication is associative but not commutative

38) Which of the following matrix is not always equal $(A+B)^2$:-

1. $A^2+2AB+B^2$
2. $A(A+B)+B(A+B)$
3. $(A+B)(B+A)$
4. $A^2+AB+BA+B^2$

Correct Answer :-

$A^2+2AB+B^2$

39) Which of the following statement is not True:-

1. Getting an inverse is impossible when $Ax = 0$ and x is nonzero
2. The matrix A can have two different inverses
3. If A is invertible, the only solution to $Ax = b$ is $x=A^{-1} b$
4. If $BA = I$ and $AC = I$, then $B = C$

Correct Answer :-

The matrix A can have two different inverses

40) Which of the following statement is not True:-

1. $(AB)^T=(BT AT)$
2. $(A+B)^T=(AT+BT)$
3. $(AB)^T=(AT BT)$
4. $(A^{-1})^T = (A^T)^{-1}$

Correct Answer :-

$(AB)^T=(AT BT)$

41)

If $A = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$ & $B = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$, $A^T B$ is?

1. 6
2. 4
3. 10
4. 8

Correct Answer :-

8

42) Consider the function $f(x,y)=2-x^2-xy-y^2$. Which of the following statement is True?

1. the function attains maximum at (0,0)
2. the function attains minimum at (0,0) [
3. (0,0) is neither maximum nor minimum of this function
4. none of these

Correct Answer :-

(0,0) is neither maximum nor minimum of this function.

43)

The vector $v = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$ & $w = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$ are

1. linearly independent
2. linearly dependent
3. none of these
4. we do not have sufficient information to comment on the linear dependency

Correct Answer :-

linearly dependent

44)

Consider the matrix $A = \begin{bmatrix} -1 & 1 \\ 1 & -1 \end{bmatrix}$. Which of the following statement is True

1. A is a positive definite matrix
2. A is a negative definite matrix
3. A is a positive semi-definite matrix
4. A is a negative semi-definite matrix

Correct Answer :-

A is a negative semi-definite matrix

45)

Suppose $Z = e^{x^2+y^2}$, then Z_{xy} will be

1. $4xye^{(x+y)}$
2. $4xye^{(x+y)^2}$

3.

$$4xye^{(x^2+y^2)}$$

4. None of these

Correct Answer :-

$$4xye^{(x^2+y^2)}$$

46) Consider the function $Y = \log(x_1^2 + x_1x_2)^2$, which of the following statement is True?

1. the function is homogeneous of degree 2 & homothetic
2. the function is homogeneous but not homothetic
3. the function is homothetic but not homogeneous
4. the function is neither homogeneous nor homothetic

Correct Answer :-

the function is homogeneous of degree 2 & homothetic

47)

The function $f(x, y) = (x + y) - \frac{1}{2}[x^2 + y^2 + 2sxy]$ is strictly concave if the value of s is in

1. (-1, +1)
2. (-∞, -1)
3. (1, ∞)
4. None of these

Correct Answer :-

(-1, +1)

48) If α be a multiple root of the polynomial equation $f(x)=0$ of order r, then the h.c.f of the polynomials $f(x)$ and $f'(x)$ contains factor:-

1. $(x-\alpha)$
2. $(x-\alpha)r$
3. $(x-\alpha)r-1$
4. $(x-\alpha)r-2$

Correct Answer :-

$(x-\alpha)r-1$

49)

The function $f(x) = \begin{cases} x^2 + 2 & \forall x \geq 0 \\ x + 2 & \forall x < 0 \end{cases}$ is

1. A quasi-concave
2. A quasi-convex
3. Both quasi-concave and quasi-convex

4. Neither quasi-concave nor quasi-convex

Correct Answer :-

Both quasi-concave and quasi-convex

50) If $f(x)$ is a concave function with $f(2)=1$ and $f'(2)=1/2$ then:-

1. $f(4) \leq 2$

2. $f(4) \leq 0$

3. $f(4) \leq 1$

4. $f(4) \leq -1$

Correct Answer :-

$f(4) \leq 2$