

S.NO.355

BATCH: 87-2016

Reg. No.

7

END OF SEMESTER EXAMINATIONS, NOVEMBER - 2017
MATHEMATICAL METHODS
SUBJECT CODE: 12UAEC05

MAJOR: B.A (Economics)
TIME : 3 HOURS

SEMESTER : III
MAX. MARKS: 75

SECTION – A (10 X 1 = 10)

Answer ALL questions:

1. Find the slope and the intercept of the straight line $2y=3x-2$.
2. Define Quadratic equation.
3. Find $\frac{dy}{dx}$ if $y = x \log x$
4. State the conditions for a function $y=f(x)$ to attain its minimum.
5. Define Utility function.
6. Give the meaning of price elasticity of demand.
7. What do you understand by Singular matrix?
8. Given that $A = \begin{pmatrix} 1 \\ 3 \\ 0 \end{pmatrix}$ and $B = (1 \ 0 \ 2)$, find BA.
9. Find A^{-1} if $A = \begin{pmatrix} 1 & 7 \\ 2 & 9 \end{pmatrix}$.
10. What is scalar multiplication of a matrix?

SECTION – B (5 X 4 = 20)

Answer any FIVE questions:

11. Determine the equation of the straight line which passes through the point (15 , -3) and cuts off equal intercepts from both axes.
12. Given that $\alpha^2 + \beta^2 = 17$ and $\alpha \beta = 4$ where α and β are the roots of a Quadratic equation. Determine the equation.
13. Find the first order and the second order partial derivatives for the function $Z = 3\sqrt{xy}$.
14. Determine the maxima and the minima of the function $y = 2x^3 - 6x$.
15. Prove that AC is minimum when AC and MC are equal.
16. Explain with suitable examples any five types of matrix.
17. State and explain the properties of matrix transpose.

...2...

18. Solve for x and y using Inverse method.

$$7x - 5y = 11$$

$$3x + 2y = 13$$

SECTION - C (3 X 15 = 45)

Answer any THREE questions:

19. i) Find the centre and the radius of the circle

$$x^2 + y^2 + 6x - 4y - 3 = 0$$

ii) What is the length of the radius of the circle

$$x^2 + y^2 = \sqrt{16}$$

20. Examine the maxima and the minima of the function

$$w = 16 - (x - 2)^2 - (y - 2)^2$$

21. Explain the Application of functions in Economics.

22. i) If $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$, find $A^2 - 5A + 7I$.

ii) If $A = \begin{pmatrix} 1 & -1 \\ 2 & -1 \end{pmatrix}$, $B = \begin{pmatrix} a & 1 \\ b & 1 \end{pmatrix}$ and $(A + B)^2 = A^2 + B^2$, find a and b.

23. Solving the following equations using Cramer's rule.

$$2x_1 + 3x_2 - x_3 = 9$$

$$x_1 + x_2 + x_3 = 9$$

$$3x_1 - x_2 - x_3 = -1$$
