

School of Liberal Education

**Bachelor of Arts Honours in Economics
Semester End Examination - Jun 2024**

**Duration : 180 Minutes
Max Marks : 100**

Sem IV - K1UB404T - Mathematics for Economics-I

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

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| 1) | Explain the concept of Homogenous function. | K1(2) |
| 2) | Explain the concept of relative growth rate in exponential functions. | K2(4) |
| 3) | Derive the mid point of straight line. | K2(6) |
| 4) | Determine whether $y = x^3 + 2x^2y + y^3$ is a homogeneous function or a heterogeneous function. If it is homogenous, apply Euler's theorem to find the degree of homogeneity. | K3(9) |
| 5) | Describe the rules of logarithms. | K3(9) |
| 6) | Describe log-function rule. | K5(10) |
| 7) | Make up your own demand function and then derive the corresponding MR function and find the output level which corresponds to zero marginal revenue. | K4(12) |
| 8) | Describe GP series. Derive GP to find out the Addition formula of all elements in GP. | K5(15) |
| 9) | Given $A = \begin{Bmatrix} -6 & 3 & 3 \\ 3 & -6 & 3 \end{Bmatrix}$ To find the characterstics roots of A, determinants of the characterstics matrix $A - \lambda I$ must equal to zero and find the characterstics vector. | K5(15) |
| 10) | $\begin{aligned} 2x_1 + 4x_2 - x_3 &= 52 \\ -x_1 + 5x_2 + 3x_3 &= 72 \\ 3x_1 - 7x_2 + 2x_3 &= 10 \end{aligned}$ Use Inverse matrix method to solve given equation to get the values of x_1, x_2 and x_3 | K6(18) |