Name. _____	Printed Pages:01
Student Admn. No.: _____	

School of Liberal Education
Backlog Examination (SEE), June 2023
[Programme: BA (H) Economics] [Semester: II] [Batch:]

Course Title: Mathematics for Economics	Max Marks: 100
Course Code: ECO1007	Time: 3 Hrs.

Instructions:	1. *All questions are compulsory.*
	2. *Assume missing data suitably, if any.*

		K Level	COs	Marks
SECTION-A (15 Marks)	**5 Marks each**			
1.	Differentiate the following functions. $y = (4x^3 - 3)(2x^5)$ $y = (2x^5 + 5)(3x^5 - 8)$	K1	CO1	5
2.	Given the demand schedule $p = 120 - 3q$ derive a function for MR and find the output at which TR is a maximum	K2	CO2	5
3.	Define the Critical points	K1	CO3	5
SECTION-B (40 Marks)	**10 Marks each**			
4.	Use Cramer's rule to solve given equations. $5x_1 - 2x_2 + 3x_3 = 16$ $2x_1 + 3x_2 - 5x_3 = 2$ $4x_1 - 5x_2 + 6x_3 = 7$	K2	CO4	10
5.	Given the IS equation $0.3Y + 100i - 252 = 0$ and the LM equation $0.25\,Y - 200i - 176 = 0$. Use Cramer's rule to find the equilibrium level of income and rate of interest.	K3	CO1	10
6.	Find (a) the minors and (b) cofactors for the elements of the second column, given $$A = \begin{bmatrix} 13 & 6 & 11 \\ 12 & 9 & 4 \\ 7 & 10 & 2 \end{bmatrix}$$	K3	CO2	10
7.	Analyse global maxima and global minima. **OR** Analyse local maxima and global minima.	K4	CO4	10
SECTION-C (45 Marks)	**15 Marks each**			
8.	The (a) first (b) second and (c) cross partial derivatives for $z = 7x^5 + 9xy + 2y^5$	K3	CO1	15
9.	Find the marginal productivity of all factors of production of given equation. $Q = 45 + 16x + 3x^2 + 3x^3 + 5y + 2y^2 + 3z^2 + 5z$	K5	CO3	15
10	Find the marginal cost of a firm's different products when the total cost function is $C = 16x^2 + 6x + 2.5\,xy + 8y + 4y^2$ and also determine the marginal cost of x and y when x= 6, y=4 **OR** (a) Find the critical points (b) Test whether the function is at a relative maximum or minimum. $z = 2y^3 - x^3 + 147x - 54y + 12$	K5	CO4	15