22ECP207N / 22ECP207

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MA DEGREE EXAMINATION MAY 2024
(Second Semester)

Branch – **ECONOMICS**

MATHEMATICAL ANALYSIS

Time: Three Hours | Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	If $A=\begin{bmatrix}2 & 3\\ -1 & 4\end{bmatrix}$ and $B=\begin{bmatrix}5 & -2\\ 1 & -3\end{bmatrix}$, A+B= a) $\begin{bmatrix}7 & 1\\ 2 & 7\end{bmatrix}$ b) $\begin{bmatrix}7 & 1\\ 0 & 1\end{bmatrix}$ c) $\begin{bmatrix}-3 & 5\\ -2 & 7\end{bmatrix}$ d) $\begin{bmatrix}-3 & 1\\ 0 & 1\end{bmatrix}$	K1	CO1
	2	The transpose of the cofactor matrix is called as a) Adjoint of the matrix b) Power of a matrix c) Minor of a matrix d) Rank of a matrix	K2	CO1
2	3	If the total cost function is $c=5+2x^2-x^3$, margined cost at x=10 is a) 0 b) -260 c) -795 d) 75	K1	CO2
	4	The derivative of $\frac{1}{X3}$ is a) $\frac{3}{x4}$ b) $\frac{-2}{X2}$ c) $\frac{-3}{X4}$ d) $\frac{3}{x-4}$	K2	CO2
3	5	Find $\frac{\delta u}{\delta x}$ for the function u=x+y. a) 1 b) 0 c) 2 d) 3	K1	CO3
	6	If production function $Q=24KL-10L^2-8K^2$ the value of $\frac{\delta Q}{\delta L}$ is a) 24K-20L b) 20K-24L c) 24L-16K d) 24L+24K	K2	CO3
4	7	The differential co-efficient of a constant c is a) 1 b) 0 c) c d) -1	K1	CO4
	8	$f(x,y)=\frac{x3-y3}{x+y}$ is a homogeneous function of degree _____. a) 1 b) 2 c) 3 d) not defined	K2	CO4
5	9	$\int_0^2 \chi^3 dx =$ a) 0 b) 4 c) 8 d) 6	K1	CO5
	10	$\int 5x^4 dx =$ a) χ^4+c b) χ^5+c c) $5\chi^5+c$ d) $5\chi+c$	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the types of matrix.	K4	CO1
		(OR)		
	11.b.	Find the inverse of $A=\begin{bmatrix}4 & 0 & 2\\ 2 & 10 & 2\\ 3 & 9 & 1\end{bmatrix}$.		
2	12.a.	Calculate the maxima or minima for the function $z= 10\chi+20y- \chi^2 - y^2$.	K4	CO2
		(OR)		
	12.b.	Show the rules of differentiation.		
3	13.a.	Find the first and second order partial derivatives of the following function $U= \chi^3 y^2 + \chi^6 - y^3$.	K5	CO3
		(OR)		
	13.b.	Analyze the applications of partial derivatives in Economics.		
4	14.a.	Solve: $\left(\frac{1+x2}{1+y}\right)= xy \frac{dy}{dx}$.	K5	CO4
		(OR)		
	14.b.	Write a short note on cobweb model.		
5	15.a.	Evaluate $\int 9x^4 (x^5+7)^8 dx$.	K6	CO5
		(OR)		
	15.b.	State the various type of integration.		

SECTION - C (30 Marks)

Answer **ANY THREE** questions
ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Solve the equations by using cramer's rule. 2x-3y+4z=5 x + 2y-3z=8 x –y –z =1	K6	CO1
2	17	Find the elasticity of demand at p=3, if the demand function $q=32-4p-p^2$.	K4	CO2
3	18	If $z=\frac{x+4}{2x+5y}$, find the second order partial derivatives.	K5	CO3
4	19	Explain the linear differential equations.	K5	CO4
5	20	Given the demand function $P=85-4x- x^2$, find the consumer' surplus at x=5.	K4	CO5

Z-Z-Z END