PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BA DEGREE EXAMINATION DECEMBER 2019
(Fourth Semester)

Branch - ECONOMICS

MATHEMATICAL METHODS-II

Time : Three Hours   Maximum : 75 Marks

SECTION-A (20 Marks)
Answer ALL questions
ALL questions carry EQUAL marks (10x2 = 20)

1   Define 'Differential calculus'.

2   If $Y=X^3+X^8$, find $\frac{}{dx}$.

3   For $U = x^3+y^2$, find all the partial derivatives.
4   Find the total differential of $U = 3x^2+xy-2y^3$.
5   What do you mean by integral calculus?
6   What is meant by definite integration?
7   Define 'Linear programming'.
8   What do you mean by objective function in LPP?
9   Comprehend the term 'Input-output analysis'.
10   Comment on 'Technical co-efficient'.

SECTION - B (25 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks (5x5 = 25)

11 a   Find $\frac{dy}{dx}$ of the following functions:
        (i) 2x-3y=6 (ii) $x^2y=6$

                              OR

   b   Find the maxima and minima of the following function:

        $Y = 2x^3-3x^2-36x+10$.

12 a   Find first and second order partial derivatives of the following function and

        verify that $dxdy\ dydx$.

        $Z = 2x^3+5x^2y+xy^2+y^2$.

                              OR

   b   Determine marginal utilities of x and y for the total utility function $U = \frac{X^3}{X^2}$

13 a   Evaluate $\int_1 (x^3-2x-3)dx$.

                              OR

   b   Calculate the area beneath the curve $y = x^J$ between x=3 and x=6.

14 a   Find dual of the following LPP:
        Maximize $Z = 45_x+80_y$
        Subject to $5_x+20_y<400$
                   $10_x+15_y<450$

SECTION - C (30 Marks)
Answer any THREE Questions
ALL Questions Carry EQUAL Marks (3x10 = 30)

16   Find the profit maximization output level, profit, TR, AR, MR, TC, AC

and MC, given the demand function q=^-40, and average cost function

AC=100+10q.

17   Find the total differential of $Z = \dfrac{x^2 - y^2}{x^2 + y^2}$

18   The demand function for a commodity p = 25D-20. The supply function
P =5D+60. Find producer's surplus.

19   Solve graphically:

Maximize 7i=2x+10y
Subject to 2x+2y < 18
5x+2y<30
x>0, y>0.

20 In an economy of two industries A and B, the data given below is in
million of rupees.

!		Purchase by		Final Demand	Total output
		A	B		
Sales by	A	12	6	6	24
	B	6	3	9	18

Determine the tota output, if the final demand changes to 18 for A and 36
forB.

Z-Z-Z   END