PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BA DEGREE EXAMINATION DECEMBER 2018
(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 (10 x 2 = 20)

1 What is Marginal Revenue?
2 What are the conditions for maximization?
3 What is meant by Partial Differentiation?
4 State the marginal utility equation.
5 What is Integration?
6 What is indefinite integration?
7 State the different parts of linear programming problem.
8 Define the term slack variable.
9 What is Input-Output Analysis?
10 Define closed input-output model.

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

11 a If $y = -x(x^2 + 3)$ find $d_y/d_x = ?$

OR

b The total cost function is $c = \frac{1}{3}Q^3 + 6Q^2 + 12Q$, find AC and MC.

12 a Find the total differential of $z = x^3 + 3x^2y + 3y^2x + y^3$

OR

b Find the first and second order partial derivatives of the following function $u = x^2y^2 + x^5 + y^6$ and also verify that $\frac{d^2u}{dxdy} = \frac{d^2u}{dydx}$

13 a Explain the application of integration in economics.

OR

b Describe the different rules of integration.

14 a Explain the uses of Linear programming.

OR

b If $A = \begin{bmatrix} 2 & 4 & 5 \\ 7 & 8 & 9 \\ 15 & 20 & 25 \end{bmatrix}$, find the saddle point.

15 a Check for the variability of the system using Hawking-Simen conditions. If the technology coefficient matrix A is $\begin{bmatrix} 0.4 & 0.1 \\ 0.7 & 0.6 \end{bmatrix}$

OR

b Explain the assumptions of input-output analysis.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 The demand and total cost functions are p=25-4x and $TC = x^2 + 5x - 30$ respectively. Find the maximum profit.

17 Given $z = x^3 e^{2y}$, find all the partial derivatives of second order.

18 If $MR = 16 - x^2$, find the maximum total revenue. Also and the total and average revenue and demand.

19 How will you solve a given L.P.P by graphical method?

20 $A = \begin{bmatrix} 0.3 & 0.3 \\ 0.1 & 0.2 \end{bmatrix}$ is the technological coefficient matrix. $F.D = \begin{bmatrix} 200 \\ 300 \end{bmatrix}$ is the final demand matrix. Determine the gross output.

Z-Z-Z END