ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Mathematics & Statistics)

WARNING

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

Course: Business Mathematics (1429) **Semester: Spring, 2014**
Level: B.A, B.Com, BBA **Total Marks: 100**

ASSIGNMENT No. 1
(Units 1-4)
All questions carry equal marks

Q.1 a) Three men are seeking a public office. Candidates A and B are given same chances of winning but the candidate C is given twice the chance of either A or B.
   i. What is the probability than C wins.
   ii. What is the probability that B does not win.

b) What is meant by sample space and events? Explain with the help of examples.

Q.2 The Data of heart attack victims of a certain area in a hospital is given below. For a given day what is the probability that:
   i. At least 6 victims will be seen.
   ii. No one will be seen.
   iii. No more than seven victims will be seen.

No of Victims treated(n)	P(n)
Fewer than 5	.08
5	.20
6	.26
7	.30
More than 7	.16

Q.3 a) Construct the discrete probability distribution which corresponds to the experiment of tossing two fair coins three times. Let X represents the number of heads occurring in three tosses.
The find
   i. $P(X = 2)$
   ii. $P(X \leq 4)$

b) Solve the following equation $t^2 - 6t + 9 = 0$ by at least two methods.

Q.4 a) Find the slope of the line passing through the points (2, 4) and (-2, -4).

b) Solve the following system of equations simultaneously and represent then on graph paper.

$$2x + 3y = 8$$
$$3x - 2y = -1$$

Q.5 a) Find all the real numbers satisfying the inequality $x^2 - 4x - 12 \leq 0$.

b) Find the distance between the points (-1, 2) and 2, 6) and verify your answer by Pythagoras theorem.

ASSIGNMENT No. 2

(Units 5-9) **Total Marks: 100**

All questions carry equal marks

Q.1 a) Explain diagonal matrices and their types with the help of examples.

b) Solve the following system of equations using Crammer's Rule.

$$x_1 - 2x_2 - 2x_3 = 5$$
$$2x_1 + 3x_2 - 4x_3 = 5$$
$$x_1 - 4x_2 + 3x_3 = 2$$

Q.2 The technology matrix for a three industry input-output model is

$$A = \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} \begin{pmatrix} 0.3 & 0.3 & 0.2 \\ 0.1 & 0.2 & 0.3 \\ 0.2 & 0.1 & 0.4 \end{pmatrix}$$

If the non-industry demand for the output of these three industries is d_1 = \$4 million, d_2 = \$6million and d_3 = \$3 millions respectively.

i. Determine the equilibrium output level for the three industries.

ii. Determine the inter industry demand for the three industries.

Q.3 a) Find the matrix of cofactors of the matrix $A = \begin{pmatrix} 1 & -1 & 1 \\ 2 & 3 & -4 \\ 1 & 2 & 3 \end{pmatrix}$

b) Find the average rate of change in the value of y in moving from x = –1 to x = 2, for the function:

$$y = f(x) = x^2 - 2x + 3$$

Q.4 a) Find all critical points of the function:

$$f(x) = x^2 - 8x + 4c + 5$$

b) Given the function $f(x, y) = x^2 + xy + y^2$, evaluate

$$f_{xy},\ f_{yx},\ \text{and}\ f_{xyx}$$

Q.5 The annual profit for a firm depends upon the number of units produced. The function which describes the relationship between the profit in dollars and the no. of units x produced is given by

$$P(x) = -0.01x^2 + 10x - 40$$

a) Determine the no. of units which will result in maximum profit.

b) What will be the maximum profit?

BUSINESS MATHEMATICS

Level: B.A/B.Com/BBA Course Code: 1429

Unit No.1 **Probability Theory**
Introduction, Basic Probability Theory, Definition, Laws of Probability, Conditional Probability, Independent and Dependent Events, Applications.

Unit No.2 **Random Variables**
Introduction, Random Numbers and their Generation, Application of Random Numbers, Concepts of Random Variables and their Construction, Discrete and Continuous Random Variables.

Unit No.3 **Equations**
Solving Fist Degree Equations, Quadratic Equations, Solution of Quadratic Equations by Different Methods, Inequalities, Absolute Value, Co-ordinate System

Unit No.4 **Linear Equations**
Characteristic of Linear Equations, Slope- intercept Form, Determining the Equations, Applications.

Unit No.5 **Matrices and Determinants**
Matrices, Different Kinds of Matrices, Addition, Subtraction and Multiplication of Matrices, Determinants, Application of Matrices and Determinants.

Unit No.6 **Inverse of Matrices**
Expansion of Determinants, Different Properties of Determinants, Cofactors and Minors of Elements of a Matrix, Cramer's Rule, Solution of System of Linear Equations by Use of Matrices.

Unit No.7 **Differentiation**
Derivatives, Differentiation of Explicit and Implicit Functions, Maxima and Minima, Applications of Derivatives.

Unit No.8 **Partial Derivatives**
Partial Derivatives, Maxima and Minima for Functions of Multi-Variables Applications of Partial Derivatives.

Unit No.9 **Optimization**
First Derivative Test. 2nd Derivative Test, Curve Sketching, Revenue, Cost and Profit Applications in Business.

Recommended Book:-

1. Applied Mathematics for Business, Economics and the Social Sciences. By Frank S. Budnick. Mcgraw-Hill