



ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE

FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING

FIRST SEMESTER TEST, 2020/2021 ACADEMIC SESSION

COURSE TITLE: Advanced Programming and Statistics

COURSE CODE: EEE 513

EXAMINATION DATE: 22ND MARCH, 2021



TIME ALLOWED: 3 Hours

INSTRUCTIONS:

1. Answer **QUESTION 1** and any other **four (4)**
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE **NOT** ALLOWED TO BORROW CALCULATORS AND ANY OTHER WRITING MATERIALS DURING THE EXAMINATION.

Question 1 (20 Marks)

- (a) The current, **I** milliamperes, in a circuit is measured for various values of applied voltage **V** volts. If the law connecting **I** and **V** is $I = aV^n$, where **a** and **n** are constants, draw a suitable graph and determine the values of **a** and **n** that best fit the set of recorded values.

V	2	5	12	25	32	40
I	5.62	13.8	52.5	112	160	200

- (b) List and give symbolic equivalence of four (4) basic mathematical operators that could be used in programming.
- (c) Declare variable $x = 1$ to 1000 with an interval of **0.05**

Question 2 (10 Marks)

- (a) Compute the mean and standard deviation for the following data:

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

- (b) Write the programming writing/coding for the following expressions:

(i) $2x^2 + 3\sqrt{4x}$ (ii) $(5x / 4x^4)^{\frac{1}{2}}$ (iii) $4x + 8x^{\frac{1}{2}}$

Question 3 (10 Marks)

- (a) Write the MATLAB Symbolic Math program that will compute values for X_1 , X_2 , and X_3 for the matrix:

$$2X_1 - 4X_2 - X_3 = 3$$

$$X_1 + X_2 - 2X_3 = 6$$

$$X_1 - 3X_2 + X_3 = -4$$

- (b) Write the MATLAB Symbolic Math program for the computation of square-root of the following polynomials:

(i) $2x^5 + 3x^2 - 1$

(ii) $4x^3 - 2x^2 + 4$

(iii) $5x^3 - 2x^2 + 4x - 3$

Question 4 (10 Marks)

- (a) Given that the values of x and y are related by the equation $y = ae^{nx}$:

x	2	5	12	25	32	40
y	5.62	13.8	52.5	112	160	200

Write the systematic algorithm for curve fitting in MATLAB to obtain exponential model

- (b) List **six** (6) programming languages that you know