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SASTRA » Numerical &amp; Statistical Analysis

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## Unit 1 - UNIT - I : Transcendental Polynomial & Simultaneous equations and Interpolations

### Course outline

#### UNIT - I : Transcendental Polynomial & Simultaneous equations and Interpolations ()

- ☒ Lecture 1: Squaring method for complex roots - Muller, Birge-Vieta method (week 1) (unit?unit=1&lesson=2)
- ☐ Lecture 2 Squaring method for complex roots - Graeffe's Root squaring method (week 1) (unit?unit=1&lesson=3)
- ☐ Lecture 3 - Muller, Birge Vieta and Graeffe's root squaring method (week 1) (unit?unit=1&lesson=4)
- ☐ Quiz: Assessment – 1 (assessment?name=16)
- ☐ Lecture 4 : Solution of simultaneous equations – Gauss Jacobi I method (week 2) (unit?unit=1&lesson=5)
- ☐ Lecture 5 - Solution of simultaneous equations - Gauss Seidel method (week 2) (unit?unit=1&lesson=6)
- ☐ Lecture 6 : Problems in Gauss Jacobi and Gauss seidel methods (week 2) (unit?unit=1&lesson=7)
- ☐ Lecture 7 : Finite difference operator – Relation between operators (week 2) (unit?unit=1&lesson=8)
- ☐ Lecture 8 : Finite Difference operator -

## Assessment -- 1

The due date for submitting this assignment has passed.

Due on 2023-04-09, 23:59 IST.

As per our records you have not submitted this assignment.

1) Which of the following method is used to find the complex roots of the given polynomial equation 1 point

- ☐ Graeffe's method
- ☐ Muller method
- ☐ Gauss-Seidel method
- ☐ None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Graeffe's method*

2) Using Graeffe's method, we can find for a cubic algebraic equation 1 point

- ☐ one root at a time
- ☐ two roots at a time
- ☐ all the roots at a time
- ☐ none of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*all the roots at a time*

3) Find the root of the equation  $x^3 + 2x^2 + 10x - 20 = 0$ , using Birge – Vitta method correct to 3 decimal places. 1 point

- ☐ 1.369
- ☐ 1.3
- ☐ 1.36
- ☐ 1.4

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*1.369*

4) Bridge-vita method is used to solve 1 point

- ☐ Algebraic equations
- ☐ System of Simultaneous equations
- ☐ Differential equations
- ☐ None of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Algebraic equations*

5) Muller's method is used to solve 1 point

- ☐ System of Simultaneous equations
- ☐ Algebraic equations
- ☐ Differential equations
- ☐ None of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Algebraic equations*

6) Which method gives all the approximate roots of an equation at the end of all iterations 1 point

problems (week 2)  
(unit?unit=1&lesson=9)

- ☐ Quiz: Assessment – 2 (assessment? name=17)
- ☐ Lecture 9 : Interpolation - Introduction (week 3) (unit? unit=1&lesson=10)
- ☐ Lecture 10 :Newton's forward and backward Interpolation (week 3) (unit? unit=1&lesson=11)
- ☐ Lecture 11: Interpolation - problems (week 3) (unit? unit=1&lesson=12)
- ☐ Quiz: Assessment – 3 (assessment? name=18)

**UNIT - II :  
Numerical  
differentiation and  
Integration ()**

**UNIT - III :  
Numerical  
Solutions of ODE  
()**

**UNIT - IV :  
Statistical  
distributions and  
Test of hypothesis  
()**

**Unit V : Non-  
parametric  
statistical  
methods & Time  
series analysis ()**

- ☐ Newton Raphson method
- ☐ Birge vieta method
- ☐ Graeffe's method
- ☐ none of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Graeffe's method*

7) Which of the following method is used to find one of the roots of the given polynomial equation **1 point**

- ☐ Graeffe's method
- ☐ Muller's method
- ☐ Gauss-Seidel method
- ☐ None of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Muller's method*

8) Find the root of the equation  $x^3 - 2x - 5 = 0$  (root lies between 2 and 3) by muller's method. **1 point**

- ☐ 2.0459
- ☐ 2.0945
- ☐ 2.4059
- ☐ 2.0954

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*2.0945*

9) **1 point**  
Using Brige – Vieta method find the root of the equation  $x^4 + 2x^3 - 21x^2 - 22x + 40 = 0$ . Consider initial value of the root is 3.5

- ☐ 4.1
- ☐ 3.9
- ☐ 4
- ☐ 4.01

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*4*

10) The formula used in Birge-Vieta method to find root of a polynomial equation with nth order is ----- **1 point**

- ☐  $P_{k+1} = P_k - \frac{b_n}{c_{n-1}}$
- ☐  $P_{k+1} = P_k - \frac{b_{n-1}}{c_n}$
- ☐  $P_{k+1} = P_k - \frac{b_k}{c_{n-1}}$
- ☐  $P_{k+1} = P_k - \frac{b_{k-1}}{c_k}$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $P_{k+1} = P_k - \frac{b_n}{c_{n-1}}$

11) **1 point**  
Find the root of the equation  $\cos x = xe^x$  that lies between 0 and 1 correct to four decimal places using muller method.

- ☐ 0.5178
- ☐ 0.52
- ☐ 0.5198
- ☐ 0.517

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*0.5178*

12) **1 point**  
Find the negative root of the equation  $x^3 - 4x + 1 = 0$ , that lies between -3 and -2 correct to 4 decimals using muller method.

- ☐ -2.11
- ☐ -2.12
- ☐ -2.1149
- ☐ -2.1491

No, the answer is incorrect.

Score: 0

Accepted Answers:

-2.1149

13) Using Graeffe's root squaring method, find the real root of the equation  $x^3 - 2x + 2 = 0$ 

1 point

- ☐ -1.7692
- ☐ -1.7962
- ☐ -1.8
- ☐ -2.0

No, the answer is incorrect.

Score: 0

Accepted Answers:

-1.7692

14) Using Graeffe's root squaring method, find the roots of the equation  $x^3 + 3x^2 - 4 = 0$ 

1 point

- ☐ 1, -2, -2
- ☐ 1, 2, 2
- ☐ 2, -1, -2
- ☐ -1, -2, -2

No, the answer is incorrect.

Score: 0

Accepted Answers:

1, -2, -2

15) Using Birge – vieta method, find a real root correct to three decimals  $x^3 - 11x^2 + 32x - 22 = 0$ .

1 point

- ☐ 1
- ☐ -1
- ☐ 2
- ☐ 1.1

No, the answer is incorrect.

Score: 0

Accepted Answers:

1



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