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SASTRA » Numerical & 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 -- 3

The due date for submitting this assignment has passed.

Due on 2023-04-16, 23:59 IST.

As per our records you have not submitted this assignment.

1) Interpolation is the process of computing_____

1 point

- ☐ the values outside the interval
- ☐ intermediate values of a function
- ☐ both (a) and (b)
- ☐ none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
intermediate values of a function

2) If interpolation is required near the middle values of the table, we use

1 point

- ☐ Stirling's interpolation formula
- ☐ Bessel's interpolation formula
- ☐ Both (a) and (b)
- ☐ Newton's backward formula

No, the answer is incorrect.
Score: 0

Accepted Answers:
Stirling's interpolation formula

3) Find $\nabla(29)$ given (3,7);(4,11);(5,16);(6,22) and (7,29)

1 point

- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7

No, the answer is incorrect.
Score: 0

Accepted Answers:
7

4) Find $\Delta(7)$ given (3,7);(4,11);(5,16);(6,22) and (7,29)

1 point

- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7

No, the answer is incorrect.
Score: 0

Accepted Answers:
4

5) Find the values of y at x = 21 and x = 28 from the following data. $y(20) = 0.342$, $y(23) = 0.3907$, $y(26) = 0.4384$, $y(29) = 0.4848$

1 point

- ☐ $y(21) = 0.3583$, $y(28) = 0.4695$
- ☐ $y(21) = 0.3538$, $y(28) = 0.4596$
- ☐ $y(21) = 0.5383$, $y(28) = 0.6495$
- ☐ $y(28) = 0.3583$, $y(21) = 0.4695$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $y(21) = 0.3583$, $y(28) = 0.4695$

problems (week 2) (unit?unit=1&lesson=9)
<input type="radio"/> Quiz: Assessment – 2 (assessment? name=17)
<input type="radio"/> Lecture 9 : Interpolation - Introduction (week 3) (unit? unit=1&lesson=10)
<input type="radio"/> Lecture 10 :Newton's forward and backward Interpolation (week 3) (unit? unit=1&lesson=11)
<input type="radio"/> Lecture 11: Interpolation - problems (week 3) (unit? unit=1&lesson=12)
<input type="radio"/> 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 ()**

6) Newton forward interpolation formula is used when the interval of difference is

1 point

- ☐ varies
☐ constant
☐ varies or constant
☐ none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

constant

7) Newton backward interpolation formula is used when the interval of differencing is

1 point

- ☐ varies
☐ constant
☐ varies or constant
☐ none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

constant

8) Lagranges interpolation formula is used when the interval of differencing is

1 point

- ☐ varies
☐ constant
☐ varies or constant
☐ none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

varies

9) The following function(s) can be used for interpolation

1 point

- ☐ trigonometric
☐ polynomial
☐ exponential
☐ All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

10) Find the parabola passing through the points (0, 1), (1, 3), (3, 55) using Lagrange's interpolation formula.

1 point

- ☐ $y = 8x^2 - 6x - 1$
☐ $y = 8x^2 + 6x + 1$
☐ $y = 8x^2 + 6x - 1$
☐ $y = 8x^2 - 6x + 1$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$y = 8x^2 - 6x + 1$

11) The function $y=2x^2+3x+1$ passes through (1,6);(3,28) and (10,231). The process of finding y when x=2 is called

1 point

- ☐ interpolation
☐ extrapolation
☐ guessing
☐ regression

No, the answer is incorrect.

Score: 0

Accepted Answers:

interpolation

12) Given n points and the function $y=f(x)$ passing through all the data points. If the value of $f(x)$ is required for a value of x outside the range of the given data, the procedure is called

1 point

- ☐ interpolation
☐ extrapolation
☐ guessing
☐ regression

No, the answer is incorrect.

Score: 0

Accepted Answers:

extrapolation

13) Find $y(35)$ using Stirling's formula. $y(20) = 512$, $y(30) = 439$, $y(40) = 346$, $y(50) = 243$.

1 point

- ☐ 395

- ☐ 390
☐ 400
☐ 385

No, the answer is incorrect.

Score: 0

Accepted Answers:
395

14) Using central difference formula find $y(1.22)$ given $y(1) = 0.84147$, $y(1.1) = 0.89121$, $y(1.2) = 0.93204$, $y(1.3) = 0.96356$, $y(1.4) = 0.98545$, $y(1.5) = 0.99749$. **1 point**

- ☐ 0.9553
☐ 0.9391
☐ 0.8889
☐ 0.9139

No, the answer is incorrect.

Score: 0

Accepted Answers:
0.9391

15) Using Lagrange's formula find $y(19)$ given that $y(11) = 14646$, $y(17) = 83526$, $y(21) = 194486$, $y(23) = 279846$. **1 point**

- ☐ 130198
☐ 130189
☐ 130891
☐ 130981

No, the answer is incorrect.

Score: 0

Accepted Answers:
130198



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