x

SASTRA » Numerical & Statistical Analysis

Unit 3 - UNIT - III : Numerical Solutions of ODE

Course outline

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

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

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

○ Lecture 1: Solution by
Taylor series- First
order ODE (week 7)
(unit?
unit=34&lesson=35)

○ Lecture 2 Solution by
Taylor's series - Second
and simultaneous ODEs
(week 7) (unit?
unit=34&lesson=36)

○ Lecture 3-Solution of
Second order and
Simultaneours ODE by
Taylor's series
method(contd.,)(Week
7) (unit?
unit=34&lesson=37)

○ **Quiz: Assessment – 7**
(assessment?
name=45)

○ Lecture 4 Solution of
First order ODE by
Picard's Method (Week
8) (unit?
unit=34&lesson=38)

○ Lecture 5 :Solution by
Picard's method
(contd) (week 8) (unit?
unit=34&lesson=39)

○ Lecture 6 -Solution by
Euler's method –
Improved and modified

Assessment -- 7

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Due on 2023-05-07, 23:59 IST.

1) Accurate solution in Taylor series method is obtained if the interval of difference h is   **1 point**

○ large
○ no restrictions
○ small
○ none of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
small

2) By taylor's series, what is the value of y(1.1) if y' = x + y, y(1) = 0   **1 point**

○ 0.01103
○ 1
○ 0
○ 1.1

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.01103

3) If the exact solution of equation y' = f(x,y) with $y(x_0) = y_0$ then Taylor's series expansion for y(x) about the   **1 point**
point $x = x_0$ is y(x) = - - - -

○ $y_0 + xy_0' + x^2 y_0'' + - - -$
○ $y_0 + hy_0' + h^2 y_0'' / 2 + h^3 y_0''' / 6 + - - -$
○ $y_0 + hy_0' + h(y_0'')^2 + - - - -$
○ none of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
$y_0 + hy_0' + h^2 y_0'' / 2 + h^3 y_0''' / 6 + - - -$

4) Pointwise solution is _____   **1 point**

○ series of points which do not satisfy a pre-assigned but not known particular solution.
○ Series of points which satisfy a pre-assigned but not known particular solution
○ Series of points which do not satisfy pre-assigned and particular solution
○ none of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Series of points which satisfy a pre-assigned but not known particular solution

5) Taylor series method will be very useful for ----- approximations.   **1 point**

○ Initial value
○ finial value
○ initial starting value
○ Middle value

No, the answer is incorrect.
Score: 0
Accepted Answers:
Initial value

6) The second category methods of solving differential equations is also called ---- **1 point**

○ pointwise method
○ step by step method
○ no restriction
○ none of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
step by step method

7) Find y(0.1) by Taylor's method, given y' - 2y = 3e^x, y(0) = 0. **1 point**
()

○ 0.359
○ 0.349
○ 0.394
○ 0.943

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.349

8) Truncation error means **1 point**

○ difference between exact solution and pointwise solution
○ sum of exact solution and pointwise solution
○ product of exact solution and pointwise solution
○ none of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
difference between exact solution and pointwise solution

9) Using Taylor's method upto 3nd order find y(0.1) given that 8y' - y^2 = x, y(0) = 0.5. **1 point**

○ 0.517
○ 0.6
○ 0.4
○ 0

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.517

10) Numerical solution of ordinary differential equations are called - - - - **1 point**
()

○ Initial value problems () ()
○ finial value problems () ()
○ boundary value problems
○ numerical problems

No, the answer is incorrect.
Score: 0
Accepted Answers:
Initial value problems () ()

11) ------ method needs former calculations of upper derivatives? **1 point**

○ Taylor's
○ Euler
○ Adam's
○ Newton's

No, the answer is incorrect.
Score: 0
Accepted Answers:
Taylor's

12) In a ordinary differential equations the first category methods is_____. **1 point**

○ Taylor's method
○ Euler Method
○ Runge-Kutta Method.
○ Pointwise Method

No, the answer is incorrect.
Score: 0
Accepted Answers:
Taylor's method

13) Using Taylor's series method find the value of y at x=0.1 to five decimal places from y' = ((x^2)y) - 1, y(0) = 1 **1 point**

○ 1
○ 0.90033
○ 0
○ 0.1

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.90033

14) Apply Taylor's formula upto order 3 to find y (1.1) given that y' = x(y^(1/3)) , y(1) = 1.   **1 point**

○ 1.107
○ 1.10
○ 1.17
○ 1.2

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.107

15) Using Taylor's method find y(1.1) given that y' = log xy, y(1) = 2 upto 3rd order   **1 point**

○ 2.076
○ 2.067
○ 2.67
○ 2.036

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.036

MHRD   POWERED BY swayam

FOLLOW US

(https://www.facebook.com/swayammoocs/)   (https://www.instagram.com/swayammhrd/)   (https://twitter.com/SWAYAMMHRD)