Assessment sub
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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » **Problem Solving Through Programming In C (course)**

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Course
outline

**How does an
NPTEL
online
course
work? ()**

Week 0 : ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Thank you for taking the Week 11 : Assignment 11.

Week 11 : Assignment 11

Your last recorded submission was on 2023-10-06, 01:34 Due date: 2023-10-11, 23:59 IST. IST

1)   *1 point*

Interpolation provides a mean for estimating functions
a) At the beginning points
b) At the ending points
c) At the intermediate points
d) None of the mentioned

○ a) Option (a)
○ b) Option (b)
◉ c) Option (c)
○ d) Option (d)

2)   *1 point*

To solve a differential equation using Runge-Kutta method, necessary inputs from user to the algorithm is/are
a) the differential equation dy/dx in the form x and y
b) the step size based on which the iterations are executed.
c) the initial value of y.
d) all the above

○ a) Option (a)
○ b) Option (b)
○ c) Option (c)
◉ d) Option (d)

3)   *1 point*

A Lagrange polynomial passes through three data points as given below

x	5	10	15
$f(x)$	15.35	9.63	3.74

The polynomial is determined as $f(x) = L_0(x).(15.35) + L_1(x).(9.63) + L_2(x).(3.74)$
The value of $f(x)$ at $x = 7$ is

○ a) 12.78

◉ b) 13.08

○ c) 14.12

○ d) 11.36

4)   *1 point*

The value of $\int_0^{3.2} xe^x dx$ by using one segment trapezoidal rule is
a) 172.7
b) 125.6
c) 136.2
d) 142.8

○ a) Option (a)

◉ b) Option (b)

○ c) Option (c)

○ d) Option (d)

5)   *1 point*

Accuracy of the trapezoidal rule increases when
a) integration is carried out for sufficiently large range
b) instead of trapezoid, we take rectangular approximation function
c) number of segments are increased
d) integration is performedfor only integer range

○ a) Option (a)

○ b) Option (b)

◉ c) Option (c)

○ d) Option (d)

6)   *1 point*

Solve the ordinary differential equation below using Runge-Kutta4th order method.
Step size h=0.2.

$$5\frac{dy}{dx} + xy^3 = \cos(x), y(0) = 3$$

The value of y(0.2) is (upto two decimal points)

○ a) 2.86

◉ b) 2.93

○ c) 3.13

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Session -
July 2023 ()**

○ d) 3.08

7)   *1 point*

Match the following

A. Newton Method   1. Integration
B. Lagrange Polynomial   2. Root finding
C. Trapezoidal Method   3. Differential Equation
D. RungeKutta Method   4. Interpolation

   a) A-2, B-4, C-1, D-3
   b) A-3, B-1, C-2, D-4
   c) A-1, B-4, C-3, D-2
   d) A-2, B-3, C-4, D-1

⦿ a) Option (a)
○ b) Option (b)
○ c) Option (c)
○ d) Option (d)

8)   *1 point*

The value of $\int_1^3 e^x(\ln x)\, dx$ calculated using the Trapezoidal rule with five subintervals is (* range is given in output rather than single value to avoid approximation error)

   a) 12.56 to 12.92
   b) 13.12 to 13.66
   c) 14.24 to 14.58
   d) 15.13 to 15.45

○ a) Option (a)
○ b) Option (b)
⦿ c) Option (c)
○ d) Option (d)

9)   *1 point*

Consider the same recursive C function that takes two arguments

unsignedintfunc(unsigned int n, unsigned int r)
{
 if (n > 0) return (n%r + func (n/r, r));
 else return 0;
}
What is the return value of the function foo when it is called as func(513, 2)?

○ a) 9
○ b) 8
○ c) 5

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X

⦿ d) 2

10) What is the output?   **1 point**
     #include <stdio.h>
     int fun(int n)
     {
     if (n == 4)
     return n;
     else return 2*fun(n+1);
     }
     int main()
     {
     printf("%d ", fun(2));
     return 0;
     }

     ○ a) 4
     ○ b) 8
     ⦿ c) 16
     ○ d) Error

You may submit any number of times before the due date. The final submission will be
considered for grading.

Submit Answers