


<https://swayam.gov.in>

https://swayam.gov.in/nc_details/NPTEL

sec20cs117@sairamtap.edu.in ✓

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



If already registered, click to check your payment status

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 ()

Week 8 ()

Week 11 : Assignment 11

The due date for submitting this assignment has passed.

Due on 2023-10-11, 23:59 IST.

Assignment submitted on 2023-10-11, 20:45 IST

- 1) **Interpolation provides a mean for estimating functions** 1 point
- 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)

Yes, the answer is correct.

Score: 1

Accepted Answers:

c) Option (c)

- 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

Week 9 ()**Week 10 ()****Week 11 ()**

- Lecture 51 :
Interpolation
(unit?
unit=101&less
on=102)

- Lecture 52 :
Trapezoidal
Rule and
Runge-Kutta
Method (unit?
unit=101&less
on=103)

- Lecture 53 :
Recursion
(unit?
unit=101&less
on=104)

- Lecture 54 :
Recursion(Con
td.) (unit?
unit=101&less
on=105)

- Lecture 55 :
Structure
(unit?
unit=101&less
on=106)

- Quiz: Week 11
: Assignment
11
(assessment?
name=273)**

- Week 11 :
Programming
Assignment 1
(/noc23_cs121
/progassignme
nt?name=274)

- Week 11 :
Programming
Assignment 2
(/noc23_cs121
/progassignme
nt?name=275)

- ☐ a) Option (a)
☐ b) Option (b)
☐ c) Option (c)
☒ d) Option (d)

Yes, the answer is correct.

Score: 1

Accepted Answers:

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 $f(x) = L_0(x) \cdot (15.35) + L_1(x) \cdot (9.63) + L_2(x) \cdot (3.74)$

The value of $f(x)$ at $x = 7$ is

- ☐ a) 12.78
☒ b) 13.08
☐ c) 14.12
☐ d) 11.36

Yes, the answer is correct.

Score: 1

Accepted Answers:

b) 13.08

4)

1 point

The value of $\int_0^{3.2} x e^x dx$ 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)

Yes, the answer is correct.

Score: 1

Accepted Answers:

b) Option (b)

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 performed for only integer range

● Week 11 :
Programming
Assignment 3
(/noc23_cs121
/progassignment?name=276)

● Week 11 :
Programming
Assignment 4
(/noc23_cs121
/progassignment?name=277)

○ Feedback
Form of Week
11 (unit?
unit=101&less
on=278)

○ Assignment 11
Solution (unit?
unit=101&less
on=108)

Week 12 ()

**DOWNLOAD
VIDEOS ()**

Books ()

**Text
Transcripts ()**

**Problem
Solving
Session -
July 2023 ()**

- ☐ a) Option (a)
☐ b) Option (b)
☒ c) Option (c)
☐ d) Option (d)

Yes, the answer is correct.
Score: 1

Accepted Answers:
c) Option (c)

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
☐ d) 3.08

Yes, the answer is correct.
Score: 1

Accepted Answers:
b) 2.93

7)

1 point

Match the following

A. Newton Method
B. Lagrange Polynomial
C. Trapezoidal Method
D. RungeKutta Method

1. Integration
2. Root finding
3. Differential Equation
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)

Yes, the answer is correct.
Score: 1

Accepted Answers:
a) Option (a)

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)

Yes, the answer is correct.

Score: 1

Accepted Answers:

c) Option (c)

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
- ☒ d) 2

Yes, the answer is correct.

Score: 1

Accepted Answers:

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

Yes, the answer is correct.

Score: 1

Accepted Answers:

c) 16