Jahangirnagar University

Institute of Information Technology

2nd Year 1st Semester B.Sc. (Honors) Final Examination-2020

Course No. # ICT - 2106
Course Title# Numerical Analysis Lab

Examination Roll No. #	**192340**
Registration No. #	**20193650283**
Academic Session #	**2018 - 2019**

Total no of written pages in the script #

Exam Date: 9, September, 2021

Instructions:

1. Examinee must write his/her exam roll no. and page no. at the top of every page of the script.
2. Do not write your name or any identification mark anywhere of the script.
3. Total time for exam is 45 minutes. You will get 15 additional minutes for submission.
4. Delay in submission is not acceptable.
5. You have to submit your exam script in PDF format.
6. The examinee must submit the examination script **through online (Google classroom/email/google form etc.)** as prescribed by the examiner.
7. You must use **your EXAM ID** only for naming your submitted file.
8. After completing the exam, you must write the total number of pages used for the exam in the top sheet.

Answer to the question no 1

CODE :

```
% Md. shakil Hossain
% Exam Roll : 192340
% Class Roll : 2023
% Question 1


f=@(x) ((x-1).*x./2).*((x-1).*x./2);
I=simpsons(f,-1,1,2)

function I = simpsons(f,a,b,n)

if numel(f)>1
      n=numel(f)-1; h=(b-a)/n;
      I= h/3*(f(1)+2*sum(f(3:2:end-
2))+4*sum(f(2:2:end))+f(end));
else
      h=(b-a)/n; xi=a:h:b;
      I= h/3*(f(xi(1))+2*sum(f(xi(3:2:end-
2)))+4*sum(f(xi(2:2:end)))+f(xi(end)));
end

end
```

Output :

```
I =

  0.3333
```

Answer to the question no 2

CODE :

```
% Md. shakil Hossain
% Exam Roll : 192340
% Class Roll : 2023
% Question 2

clc
clear all
format long
f=@(x) 2-x^2-sin(x);
df=@(x) -2*x-cos(x);
e=10^-6;
x0=2;
n=20;
if df(x0)~=0
    for i=1:n
        x1 = x0-f(x0)/df(x0)
        fprintf('x%d = %.6f\n',i,x1);
        if abs(x1-x0)<e
            break
        end
        x0 = x1;
    end
else
    disp('Newton raphson failed');
end
```

Output :

```
x1 =

  1.188220807567148

x1 = 1.188221


x1 =

  1.064727906526682

x2 = 1.064728
```

x1 =

1.061551949628386

x3 = 1.061552

x1 =

1.061549774632405

x4 = 1.061550

x1 =

1.061549774631384

x5 = 1.061550