

SIMULATION TECHNIQUES FOR ELECTRICAL ENGINEERING

Assignment-1 Questions

Unit-1

1. What are the rules for naming the variables in MATLAB environment? [5M]
2. Construct the function $y = \frac{x^2}{x^3 + 1}$ for values of x from one to two in steps of 0.01. [3M]
3. What are the operators supported by MATLAB? Explain briefly with suitable examples. [8M]
4. Mention the various types of loops does MATLAB Provides? Explain all the syntaxes with suitable examples. [8M]
5. Describe various data types which supports in MATLAB with examples. [8M]
6. Explain the types of input methods in MATLAB.
7. Calculate the value of the function $y(x) = |x| \sin x^2$ for values of $x = \pi/3$ and $\pi/6$. [3M]
8. Construct the following functions for x from 1 to 2 in steps of 0.1.
 - i. $y = x^3 + 3x^2 + 1$
 - ii. $y = \sin x^2$
 - iii. $y = (\sin x)^2$
 - iv. $y = \sin 2x + x \cos 4x$
 - v. $y = \frac{x}{(x^2 + 1)}$
 - vi. $y = \frac{\cos x}{(1 + \sin x)}$
 - vii. $y = \frac{1}{x} + \frac{x^3}{(x^4 + 5x \sin x)}$
 - Viii. $y = \frac{x}{x + \sqrt{x}}$
9. Explore the use of the functions round, ceil, floor and fix for the values $x = 0.3$, $x = 1/3$, $x = 0.5$, $x = 1/2$, $x = 1.65$ and $x = -1.34$.
10. Calculate the summations $\sum_{j=1}^{p+1} j^p$ for p equal to one, two, three and four.
11. Try to work out what value of x the following code returns (initially without running it).


```

x = 1;
if tan(73*pi*x/4) >= 0
x = 2;
else
x = pi;
end
if floor(x) == x
x = 10;
else
x = 7;
end
if isprime(x)
```

```
x = 'True';  
else  
x = 'False';  
end
```

Is this result true whichever value of x we start with?

12. Determine all integers between 1 and 50 for which $n^3 - n^2 + 40$ is greater than 1000 and n is not divisible by 3. Are any integers between 1 and 50 perfect (that is, are they equal to the sum of their factors)?