MA 473: COMPUTATIONAL FINANCE

LAB ASSIGNMENT - 5

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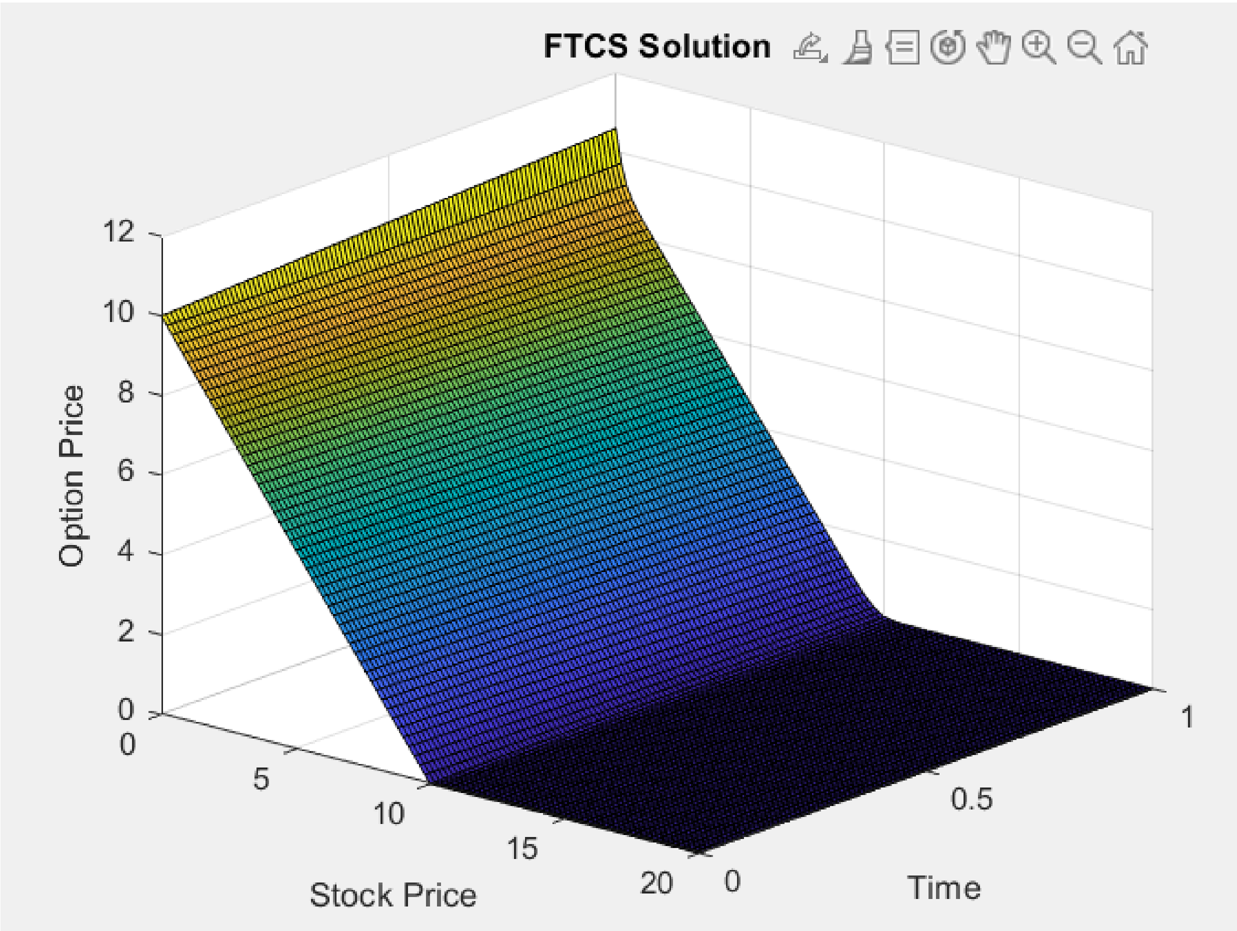
Question 1.

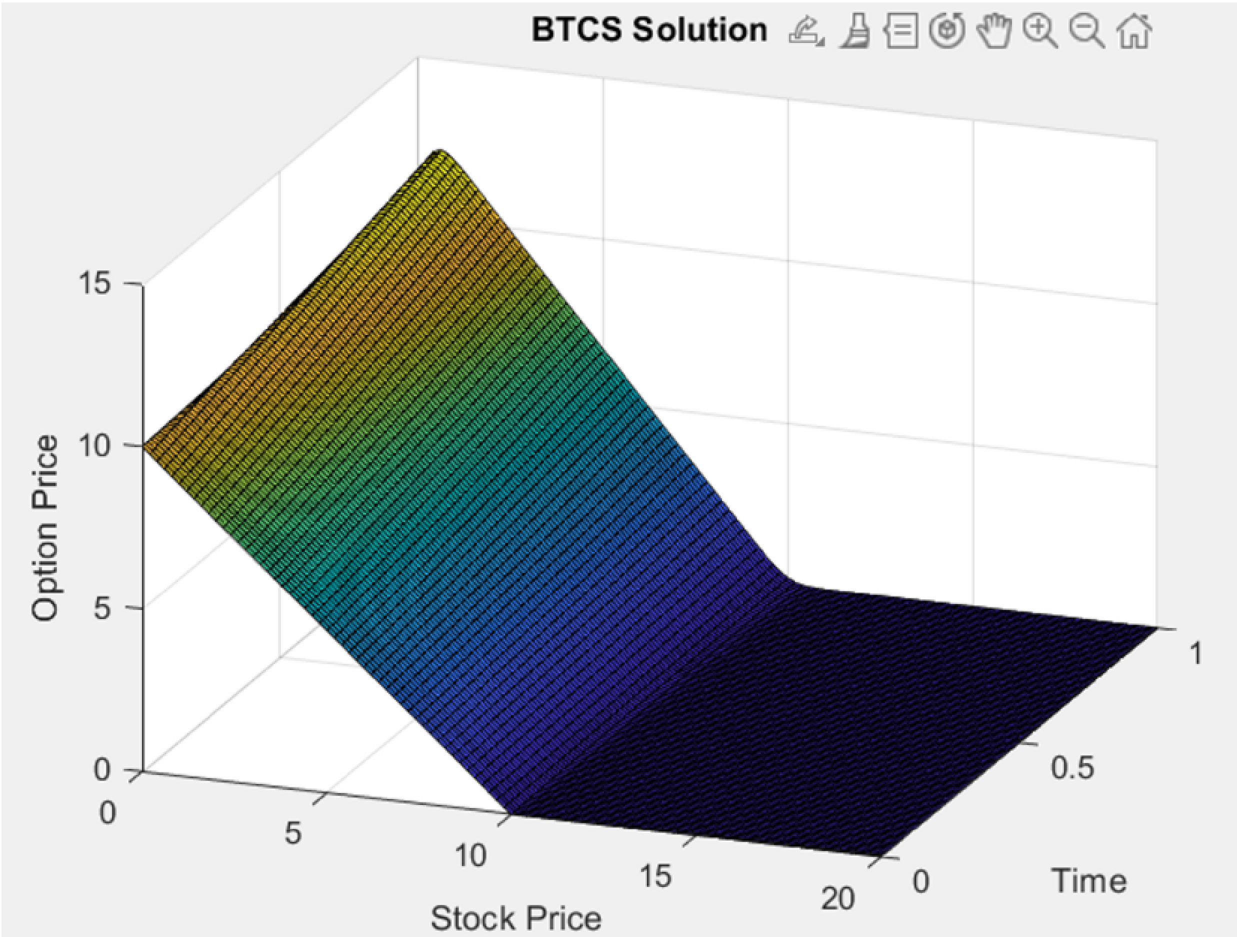
Used a random square matrix `A` of size 5x5.

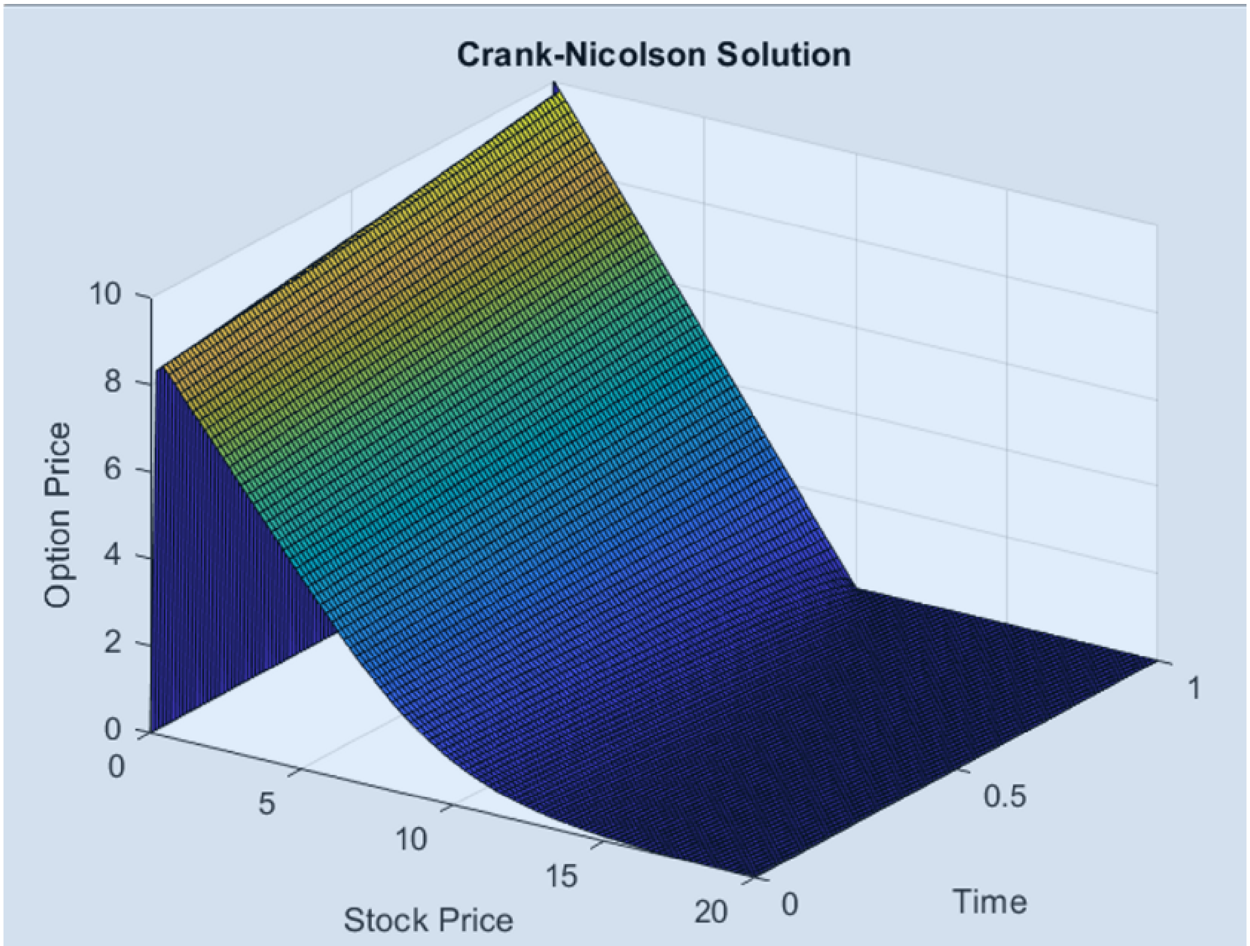
```
Jacobi Method:
Solution:
   -0.0235
    0.0373
    0.0277
    0.0580
    0.0939

Number of Iterations: 77

Gauss-Seidel Method:
Solution:
   -0.0235
    0.0373
    0.0277
    0.0580
    0.0939

Number of Iterations: 9

SOR Method:
Solution:
   -0.0235
    0.0373
    0.0277
    0.0580
    0.0939

Number of Iterations: 15
```

Question 2.

The numerical solutions plot at the final time level and the surface plots for the solution of the Black Scholes PDE for European Call using FTCS, BTCS, Crank-Nicolson schemes are:


FTCS Solution
Option Price
12
10
8
6
4
2
0
0
5
10
15
20
Stock Price
0
0.5
1
Time


BTCS Solution
Option Price
15
10
5
0
0
5
10
15
20
Stock Price
0
0.5
1
Time


Crank-Nicolson Solution
Option Price
10
8
6
4
2
0
0
5
10
15
20
Stock Price
0
0.5
1
Time