In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [2]:
```
n = 10000000
m = 3000000
```

In [3]:
```
qsort_time = 0.65561
```

In [4]:
```
T0 = np.average([0.74265, 0.76652, 0.78881])
T0
```

Out[4]:
```
0.7659933333333333
```

In [5]:
```
P = np.array([1, 2, 4, 8, 16])
```

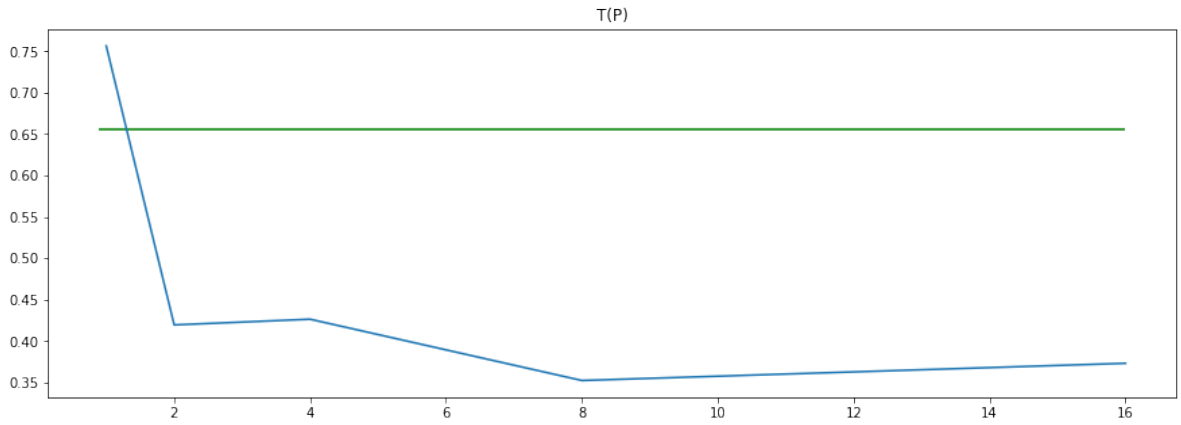
In [6]:
```
T1 = np.average([0.78784, 0.74766, 0.73385])
T1
T2 = np.average([0.41597, 0.42510, 0.41780])
T2
T4 = np.average([0.42421, 0.42185, 0.43344])
T4
T8 = np.average([0.35229, 0.34869, 0.35661])
T8
T16 = np.average([0.37936, 0.38151, 0.35902])
T16
```

Out[6]:
```
0.37329666666666661
```

In [7]:
```
T = np.array([T1, T2, T4, T8, T16])
T
```

Out[7]:
```
array([ 0.75645   ,  0.41962333,  0.4265    ,  0.35253   ,  0.3732
9667])
```

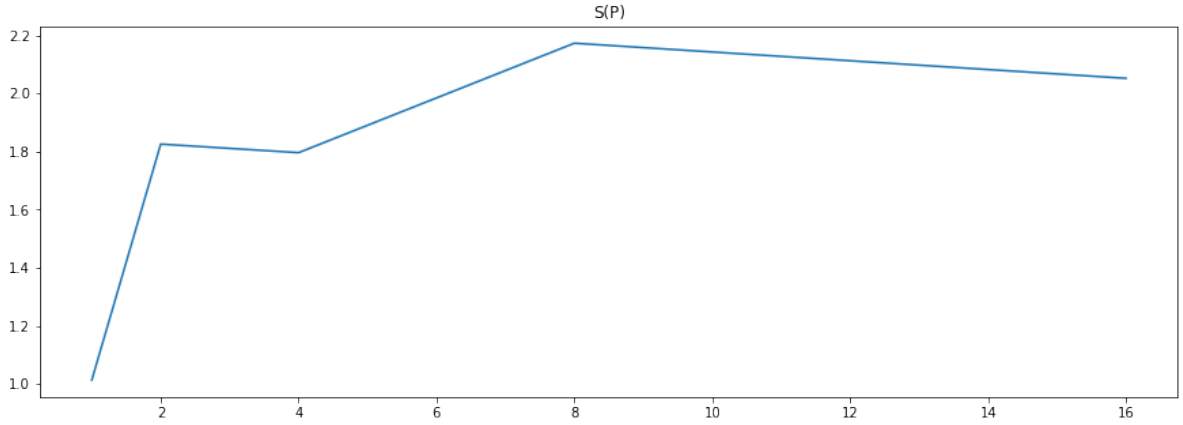
In [8]:
```
plt.figure(figsize=(15,5))
plt.plot(P, T)
plt.title("T(P)")
plt.hlines(qsort_time, 0.9, 16, colors='green')
plt.show()
```



In [9]:
```
S = T0 / T
S
```

Out[9]:
```
array([ 1.01261595,  1.82543074,  1.79599844,  2.17284581,  2.0519
6939])
```

In [10]:
```
plt.figure(figsize=(15,5))
plt.plot(P, S)
plt.title("S(P)")
plt.show()
```



In [11]:
```
E = S / P
E
```

Out[11]:
```
array([ 1.01261595,  0.91271537,  0.44899961,  0.27160573,  0.1282
4809])
```

In [12]:
```
plt.figure(figsize=(15,5))
plt.plot(P, E)
plt.title("E(P)")
plt.show()
```