In [1]:

```
import pandas as pd
import matplotlib.pyplot as plt
from scipy.stats import pearsonr
import numpy as np
```

In [2]:

```
data_set = pd.read_csv(r'random_songs_processed_dataset.csv',encoding='utf-8')
data_set.head(3)
```

Out[2]:

	artist_name	track_id	track_name	acousticness	danceability	dura
0	YG	2RM4jf1Xa9zPgMGRDiht8O	Big Bank feat. 2 Chainz, Big Sean, Nicki Minaj	0.00582	0.743	
1	YG	1tHDG53xJNGsItRA3vfVgs	BAND DRUM (feat. A$AP Rocky)	0.02440	0.846	
2	R3HAB	6Wosx2euFPMT14UXiWudMy	Radio Silence	0.02500	0.603	

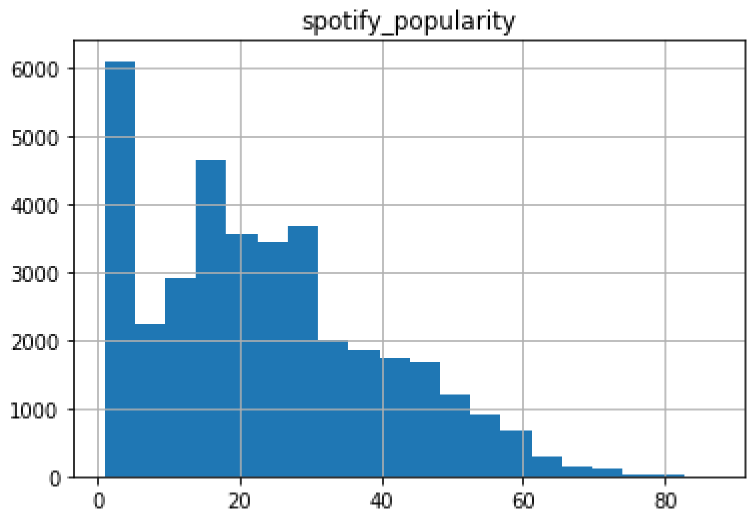
3 rows × 282 columns

In [3]:

```
data_set.hist(column='spotify_popularity',bins = 20)
```

Out[3]:

```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x0000029C6E2D3A5
8>]],
      dtype=object)
```

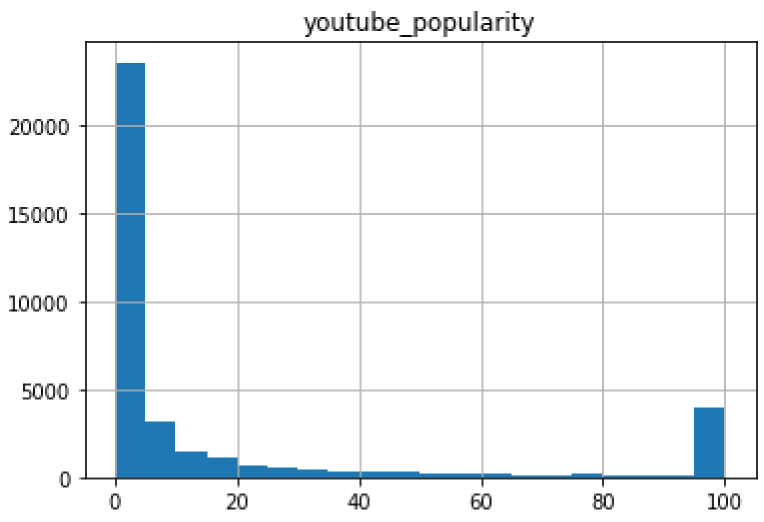


In [4]:

```
data_set.hist(column='youtube_popularity',bins = 20)
```

Out[4]:

```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x0000029C6F167B7
0>]],
      dtype=object)
```



unfortunatly, the histograms of popularity are not really similar when comparing the ones given by spotify and the one we calculated from youtube (normalized ratio of youtube rate/days since uploaded). we can see that the main different is that almost a half of the youtube tracks got the score 0. We tried applying different monotonous functions that are blocked from above by 1(1-c/(x+1) and exp(-c/x)), in order to equalize the histogram. Those functions made a small change in the histogram, but the change in the pearson coeficcient was minor (max r was about 0.3).

In [5]:

```
len(data_set[data_set.youtube_popularity==1])
```

Out[5]:

```
17383
```

we can see that the popularity extracted from youtube and the popularity given from spotify are not correlated

In [6]:

```
pearson_co,p_val = pearsonr(data_set.youtube_popularity,data_set.spotify_popularity)
pearson_co
```

Out[6]:

```
0.2981656897218889
```

In [7]:

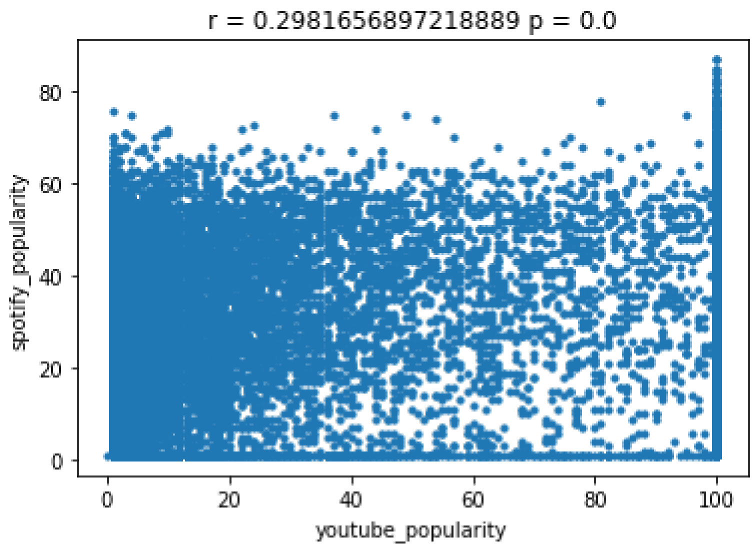
```
p_val
```

Out[7]:

```
0.0
```

In [11]:

```
plt.scatter(data_set.youtube_popularity,data_set.spotify_popularity,s=10)
plt.xlabel('youtube_popularity')
plt.ylabel('spotify_popularity')
plt.title('r = ' + str(pearson_co) + " p = " + str(p_val))
plt.savefig('spotify_youtube_popularity_scatter.png')
```


r = 0.2981656897218889 p = 0.0
spotify_popularity
youtube_popularity