Ans 1.

enter the query:

 Philip K. Dick Dick wrote many philosophical and thought-provoking short stories and novels. His stories are bizarre at times, but very approachable. He wrote mainly SF, but he wrote about people, truth and religion rather than technology. Although he often believed that he had met some sort of God, he remained sceptical. Amongst his novels, the following are of some relevance

enter the required document:
30

{19414: 1.9955458581766403, 19513: 1.8299813005323475, 1349: 1.7391353156630434, 16393: 1.6884155242593226, 14659: 1.6493917259194537, 17597: 1.6376144489273425, 18574: 1.6355444984339147, 17781: 1.5555458421080681, 16800: 1.55554456646431, 16001: 1.4955455720732997, 19723: 1.4954285295078935, 18288: 1.4755455720732997, 11206: 1.4570831484252234, 19467: 1.4559477788549278, 4533: 1.4550045916105938, 17195: 1.4357610680692068, 17352: 1.435545813793227, 15746: 1.4186227824767315, 15115: 1.4186225794726377, 14961: 1.4186203912214375, 12281: 1.4185067173828816, 22: 1.4058022533815269, 1056: 1.4057990826245097, 2701: 1.4009509774787052, 17797: 1.3961078648435787, 202: 1.3820892939783318, 15336: 1.3801610410110992, 14227: 1.3801609566886845, 5571: 1.3739234305572912, 4229: 1.3739218465228928}

Another ouput:

['oper', 'magazin']
From High List
Items are:
['sci.electronics 52824', 'rec.sport.hockey 53854', 'comp.sys.mac.hardware 51956', 'sci.electronics 52742', 'comp.sys.ibm.pc.hardware 60850', 'talk.politics.guns 54430', 'comp.sys.ibm.pc.hardware 60892', 'sci.med 58075', 'comp.sys.mac.hardware 52440', 'comp.sys.mac.hardware 51892', 'talk.politics.guns 54873', 'comp.windows.x 66945', 'rec.sport.baseball 104946', 'talk.politics.guns 54211', 'comp.sys.mac.hardware 52202', 'rec.autos 102863', 'talk.religion.misc 83442', 'comp.graphics 39670', 'comp.os.ms-windows.misc 9513', 'comp.os.ms-windows.misc 10171', 'rec.autos 102807', 'misc.forsale 76269', 'sci.crypt 15501', 'comp.windows.x 68203', 'comp.sys.ibm.pc.hardware 60843', 'comp.sys.mac.hardware 52082', 'talk.politics.mideast 75943', 'sci.crypt 15360', 'sci.electronics 53730', 'comp.sys.ibm.pc.hardware 60772']

Ans 2:(a)
Values of calculation:
IDCG: 19.407247618668023
DCG: 7.19450227631398
nDCG: 0.37071213897397365

 Number of possible URLs of maximum DCG: 5.407613242151098e+121

URLS:
    0   1   2   3   ...   134   135   136   137

```
7    3  qid:4  1:3  2:0  ...    133:6  134:0   135:0                136:0
76   2  qid:4  1:2  2:0  ...   133:113  134:0  135:13              136:47.9
40   2  qid:4  1:3  2:2  ...   133:11  134:0   135:0               136:0
36   2  qid:4  1:3  2:0  ...   133:24  134:0  135:77  136:23.9595223404047
90   2  qid:4  1:3  2:0  ...   133:113  134:0  135:0               136:0

..   ..   ...  ...  ...  ...     ...    ...    ...                 ...
44   0  qid:4  1:2  2:0  ...   133:88  134:0   135:0               136:0
43   0  qid:4  1:2  2:0  ...   133:80  134:0   135:0               136:0
42   0  qid:4  1:3  2:0  ...  133:179  134:0   135:0               136:0
41   0  qid:4  1:3  2:1  ...  133:121  134:0   135:0               136:0
102  0  qid:4  1:3  2:0  ...   133:17  134:0   135:0               136:0
```

#in que2_a.pkl file attached
 (b)
-at 50 :
nDCG=.37
-foe whole dataset:
nDCG=.67

(C)
Graph: