The relevence Score

number of files possible are :--

{0: 59, 1: 26, 2: 17, 3: 1}

relevence_Score_sorted_reverse_list

Discounted_gain

Discounted gain reverse

 $[3, 2.0, 1.261859507142915, 1.0, 0.8613531161467861, 0.7737056144690833, \\ 0.7124143742160444, 0.66666666666666666, 0.6309297535714575, 0.6020599913279624, \\ 0.5781296526357758, 0.5578858913022597, 0.5404763088546395, 0.5252990700743871, \\ 0.511916049619631, 0.5, 0.4893010842364521, 0.4796249331362629, \\ 0.23540891336663824, 0.23137821315975915, 0.227670248696953, 0.22424382421757544, \\ 0.22106472945750374, 0.21810429198553155, 0.21533827903669653, \\ 0.21274605355336318, 0.2103099178571525, 0.20801459767650948, 0.20584683246043448, \\ 0.2037950470905062, 0.20184908658209985, 0.2, 0.19823986317056053, \\ \end{aligned}$

 $0.1965616322328226, \, 0.1949590218937863, \, 0.19342640361727081, \, 0.19195872000656014, \\ 0.1905514124267734, \, 0.18920035951687003, \, 0.18790182470910757, \, 0.18665241123894338, \\ 0.1854490234153689, \, 0.18428883314870617, \, 0.18316925091363362, \, 0.0, \, 0.0, \, 0.0, \, 0.0, \, 0.0, \\ 0.0, \, 0.0$

DCG

[0, 0.0, 0.0, 0.0, 0.43067655807339306, 0.43067655807339306, 0.7868837451814152,1.7868837451814152, 1.7868837451814152, 1.7868837451814152, 2.0759485714993033, 2.0759485714993033, 2.0759485714993033, 2.338598106536497, 2.338598106536497, 2.338598106536497, 2.338598106536497, 2.5784105731046285, 3.049228399837905, 3.5119848261574234, 3.7396550748543764, 4.188142723289527, 4.630272182204535, 4.630272182204535, 4.845610461241232, 5.271102568347958, 5.271102568347958, 5.271102568347958, 5.271102568347958, 5.474897615438464, 5.474897615438464, 5.474897615438464, 5.673137478609025, 5.673137478609025, 6.063055522396597, 6.063055522396597, 6.446972962409718, 6.8280757872632645, 7.017276146780135, 7.017276146780135, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.390580969258021, 7.739747829354111, 7.913513172225551, 7.913513172225551, 8.085708606019649, 8.085708606019649, 8.085708606019649, 8.425691838593478, 8.425691838593478, 8.59430493728298, 8.930202495197063, 9.264802852817411, 9.264802852817411, 9.264802852817411, 9.264802852817411, 9.429653709539572, 9.429653709539572, 9.757065020430003, 9.757065020430003, 9.757065020430003, 9.757065020430003, 9.918620487873, 9.918620487873, 10.07916457330702, 10.239217646561842, 10.558360477901719, 10.558360477901719, 10.558360477901719, 10.558360477901719, 10.558360477901719, 10.558360477901719, 10.71522225276116, 10.871660041103231, 11.027681106125456, 11.183292497527951, 11.183292497527951, 11.183292497527951, 11.337715160329061, 11.337715160329061, 11.64503893290879, 11.64503893290879, 11.797963801211623, 11.797963801211623, 11.797963801211623, 11.797963801211623, 11.949480953621261, 11.949480953621261, 11.949480953621261, 12.099995951453252, 12.400376917900628, 12.550247459532576, 12.550247459532576]

Maximum DCG possible:-- 20.989750804831445

Q3) nDCG at 50 is 0.3521042740324887 nDCG of whole Documents 0.5979226516897831

Q4) Relevent Documents

[142.589323, 103.400313, 411.010633, 84.625987, 237.21632, 42.227139, 81.947653, 157.05992, 84.625987, 143.445062, 166.683125, 121.96152, 69.811973, 176.875026, 94.958714, 89.877389, 217.848266, 156.301965, 200.840161, 192.953467, 237.21632, 202.442155, 188.936782, 142.038637, 439.396463, 161.455583, 161.15638, 77.167163, 121.814843, 198.480212, 81.140806, 85.805962, 108.548081, 140.479685, 84.625987, 292.184568, 180.24324, 98.148911, 311.705149, 81.140806, 18.133337, 270.13233, 296.023694, 528.520116]

Number of Documents 44