fg_bgmc_unate_greedy_chvatal_UB

```
1 chvatal_UB = function(column_degs, BKV)
2 {
3   d           = max(column_degs)
4   harmonicNum = sum(1/seq(d))
5   UB          = harmonicNum * BKV
6   return(UB)
7 }
```

reference instance
chvatal_6_5.cnfW
weights = 1, 0.5, 0.33, 0.25, 0.2, 1.1

let $\mathcal{UB}$:= upper_bound

(a)

	A	B	C	D	E	F
c1	1	0	0	0	0	1
c2	0	1	0	0	0	1
c3	0	0	1	0	0	1
c4	0	0	0	1	0	1
c5	0	0	0	0	1	1

BKV = 1.1
d = mCD = 5 ;# (column F)
H(d) = 1+1/2+1/3+1/4+1/5
     = 2.283

$\mathcal{UB}$ = 2.283 * 1.1 = 2.51

reference instance
school_19_20.cnfW
weights = 1.5, 2.5, 1.5, 3, 2.5,   1, 1.5, 1, 1, 2,
            1,   1,   1, 1, 1.5, 1.5,   1, 1, 1

let $\mathcal{UB}$:= upper_bound

(b)

	A	B	C	D	...	S
c1	1	1	0	0	...	0
c2	1	0	0	0	...	0
c3	1	0	1	1	...	0
...	...	...	...	...	...	...
c20	0	0	0	0	...	1

BKV = 11.5
d = mCD = 6 ;# (column D)
H(d) = 1+1/2+1/3+1/4+1/5+1/6
     = 2.45

$\mathcal{UB}$ = 2.45 * 11.5 = 28.18

See GitHub for complete matrix