At the start:

Samplesize=20
Obsleft=136

Obsnum=1

If ranuni(0) < 20/136
→
Select obsnum #1

Samplesize = 19
Obsleft=135

Obsnum = 2
→
If ranuni(0) < 19/135
Select obsnum #2

ELSE
Do not select obsnum #1

Samplesize=20
Obsleft=135

Obsnum=2
→
If ranuni(0) < 20/135
Select obsnum #2

Etc.

Stop when samplesize = 0 (no more observations needed for sample)

If at any point in the process, samplesize ≥ obsleft, then all remaining observations will certainly be selected.