1) 192.168.1.0/24   ① $2^n = 4 \implies n = 2$

② 192.168.1.0/26 — 255.255.255.192

③ $(2^4) - 2 = 4$۲   ④ DHCP.

④ 192.148.1.0 — 192.148.1.4۳

192.148.1.4۴ — 192.148.1 = 1۲۷

~ ~ ~ 1۲۸ — ~ ~ ~ 191

~ ~ ~ 192 — ~ ~ ~ 255

2) $2^n = 14 \implies n = 4$

② IIIIIII, IIIIIIII, IIIIoooo, oooooooo $\implies$ 255.255.240.0/20
172.16.000/20

③ $(2^{12}) - 2 = 49,150$

172.14.000 $\implies$ 172.16.15.255
~ ~.14.00 $\implies$ ~ .14.31.255
~ ~.32.0 $\implies$ ~ ~ .63.255
~ ~.64.0 $\implies$ ~ ~ .127.255
~ ~ .128.0 $\implies$ ~~ .٢٥٥.٢٥٥

3) $2^n = 44 \implies n = 4$

② IIIIIIII, IIIIIIoo, ooooooooo, ooooooooo $\implies$ 255.252.0.0
10,010,10/14

$(2^{18}) - 2 = $ ~~~

10.14.000 $\implies$ 10.14.15.255
10.00.000 $\implies$ 10.15.255.255
10.14. ~ 0 $\implies$ 10.31 ~ ~
10.32 ~ ~ $\implies$ 10.44 ~ ~
10.44 ~ ~ $\implies$ 10.127 ~ ~
10.128 ~ ~ $\implies$ 10.٢٥٥ ~ ~

2) $2^{n} = 14 \implies n = 4$

② |||||||| , |||||||| , ||||0000 , 00000000 $\implies$ 255.255.240.0 /20

172.16.000 /20

③ $(2^{12}) - 2 = 49,150$

172.14.000 $\implies$ 172.16.15.255

$\sim$ .14.0 $\implies$ $\sim$ .14.31.255

$\sim$ $\sim$.32.0 $\implies$ $\sim$ $\sim$.63.255

$\sim$ $\sim$.64.0 $\implies$ $\sim$ $\sim$.127.255

$\sim$ $\sim$.128.0 $\implies$ $\sim\sim$.255.255

3) $2^{n} = 44 \implies n = 4$

② |||||||| , ||||||00 , 00000000 , 00000000 $\implies$ 255.252.0.0

10,010,10 /14

$(2^{18}) - 2 = \sim$

10.14.000 $\implies$ 10.14.15.255

1000000 $\implies$ 10.15.255.255

10.14. $\sim$ 0 $\implies$ 10.31 $\sim$ $\sim$

10.32 $\sim$ $\sim$ $\implies$ 10.44 $\sim$ $\sim$

10.44 $\sim$ $\sim$ $\implies$ 10.127 $\sim$ $\sim$

10.128 $\sim$ $\sim$ $\implies$ 10.255 $\sim$ $\sim$

2) $2^n = 14 \implies n = 4$

② |||||||| , |||||||| , ||||0000 , 00000000 $\implies$ 255.255.240.0 /20
172.16.000 /20

③ $(2^{12}) - 2 = 49,150$

172.14.000 $\implies$ 172.16.15.255
$\sim$ $\sim$.14.00 $\implies$ $\sim$ .14.31.255
$\sim$ $\sim$.32.0 $\implies$ $\sim$ $\sim$.63.255
$\sim$ $\sim$.64.0 $\implies$ $\sim$ $\sim$.127.255
$\sim$ $\sim$.128.0 $\implies$ $\sim$ $\sim$.٢٥٥.٢٥٥

3) $2^n = 44 \implies n = 4$
② ||||||| , ||||||00 , 00000000 , 00000000 $\implies$ 255.252.0.0
10,010,10 /14

$(2^{18}) - 2 = \sim$

10.14.000 $\implies$ 10.14.15.255
10000000 $\implies$ 10.15.255.255
10.14. $\sim$ 0 $\implies$ 10.31 $\sim$ $\sim$
10.32 $\sim$ $\sim$ $\implies$ 10.43 $\sim$ $\sim$
10.44 $\sim$ $\sim$ $\implies$ 10.127 $\sim$ $\sim$
10.128 $\sim$ $\sim$ $\implies$ 10.٢٥٥ $\sim$ $\sim$

4) $2^n = h$ ⟿ $\digamma = h$

|||||||, ||||||||, ||||||||, |||ooooo ⟿ 255.255.255.224/27

$(2^\phi) - 2 = 30$

192.142.10.. ⟿ 192.168.10.٣١
~ ~ .٣٢ ⟿ ~ ~ ~ ٤٣
~ ~ ٤٦ ⟿ ~ ~ ١٥٧
~ ~ ١٢٨ ⟿ ~ ~ ٢٥٥

                        ١٢٨

5) $2^n = 128$ ⟿ n ⟿ $n = V$

|||||||, ||||||||, |||||||o,ooooooooo

       | ⟿ 255.255.254.0/23

$(2^9) - 2 = 510$

172.31..0.0 ⟿ 172.31.1.٥٥٥
~ ~.2.0 ⟿ ~ ~.3..~
~ ~.4.~ ⟿ ~ ~ ٥ ~
~ ~.٤.~ ⟿ ~ ~ V ~
~ ~.8.~ ⟿ ~ ~ 9 ~

6) $2^n \geq 1000 \implies n = 10$

11111111,11111111,11111111,11000000 $\implies$ 255.255.255.192/26

$(2^6) - 2 = 92$

10.10.0.0 $\implies$ 10,10,0,1 $\cancel{2}$63
10,10,0,64 $\implies$ 10,10,0,$\cancel{\text{1}}$127
10,10,0,128 $\implies$ 10,10,0,191
10,10,0,192 $\implies$ 10,10,0,255
10,10,1,0 $\implies$ 10,10,2,93

7) $10^n \geq 1024 \implies n = 10$

11111111,11111111,111111111,11000000

$\implies$ 255,255,255,192/26

192,148,0,0 $\implies$ 192,148,0,93
N N,0,94 $\implies$ N,N,0,127
N N,0,128 $\implies$ N,N,0,191
N N,0,192 $\implies$ N N,0,255
N N,1,0 $\implies$ N,N,2,93