Assignment 2

R-2.7

1) root ⟶ Algorithm root()
return 1

2) parent ⟶ Algorithm parent(p)
return p/2

3) leftChild ⟶ Algorithm leftChild(p)
return 2*p

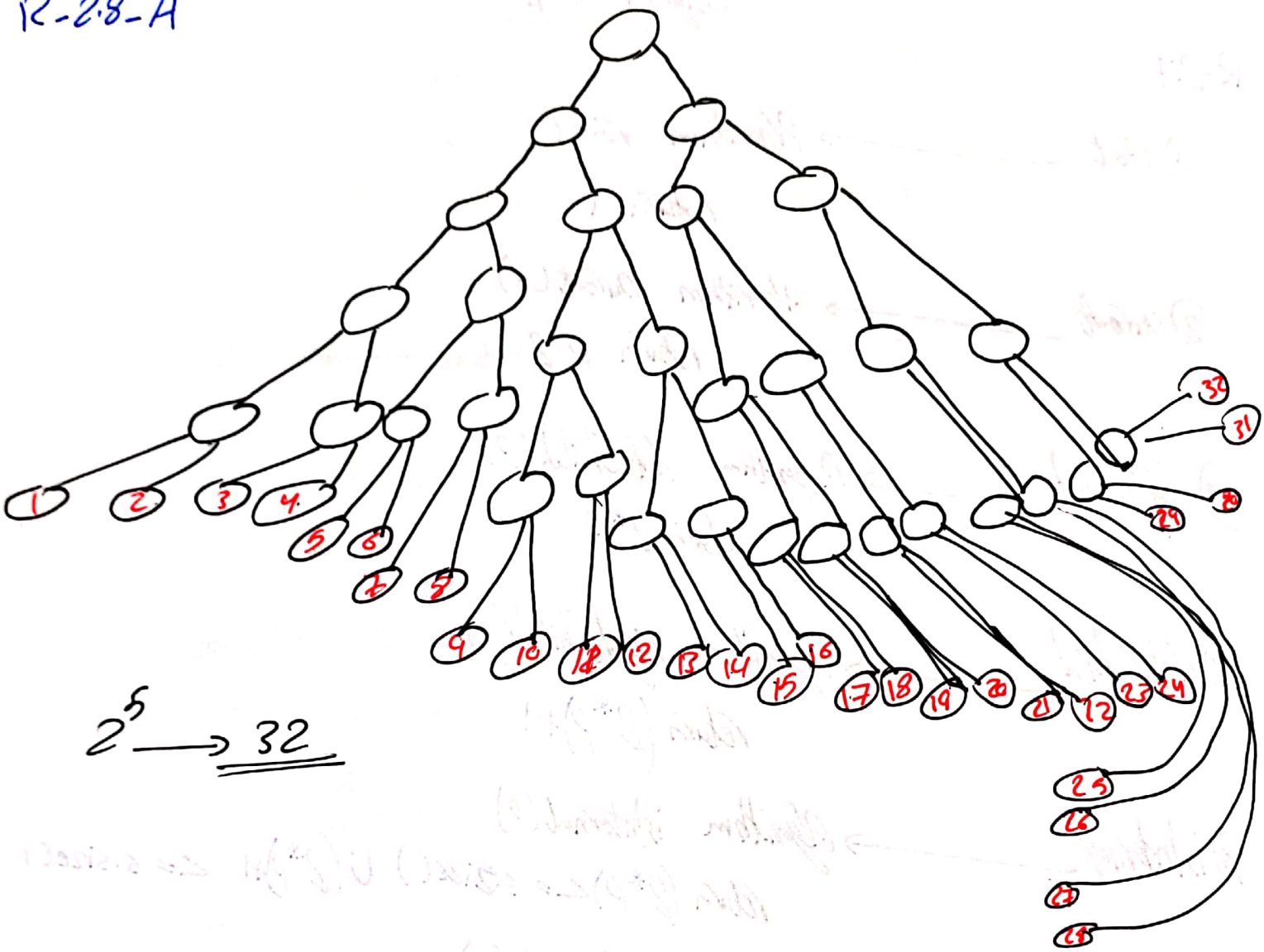
3) rightChild ⟶ Algorithm rightChild(p)
return (2*p)+1

4) isInternal ⟶ Algorithm isInternal(p)
return (2*p) <= s.size() ∪ (2*p)+1 <= s.size()

5) isExternal ⟶ Algorithm isExternal(p)
return (2*p) > s.size() ∩ (2*p)+1 > s.size()

6) isRoot ⟶ Algorithm isRoot(p)
return p == 1

R-2.8-A



$2^5 \longrightarrow 32$

R-2.8-B

→ The minimum number of external nodes is

$h+1 \longrightarrow 5+1 \longrightarrow 6$

each node has it's left external & right node is Internal

R-2.8.C

→ The maximum number of external nodes is

$2^h \longrightarrow 2^5 \longrightarrow 32$

each Internal node has two external node.

R-2.8.D $\log(n+1)-1 \leq h \leq (n-1)/2$ assum $h=0 \rightarrow n=1$

~~$\log(2)-1 \leq 0 \leq 1/2$~~

$\log(2)-1 \leq h \leq 0$

$0 \leq h \leq 0$

$0 \leq 0 \leq 0$ ✓

R-2.8.E ??