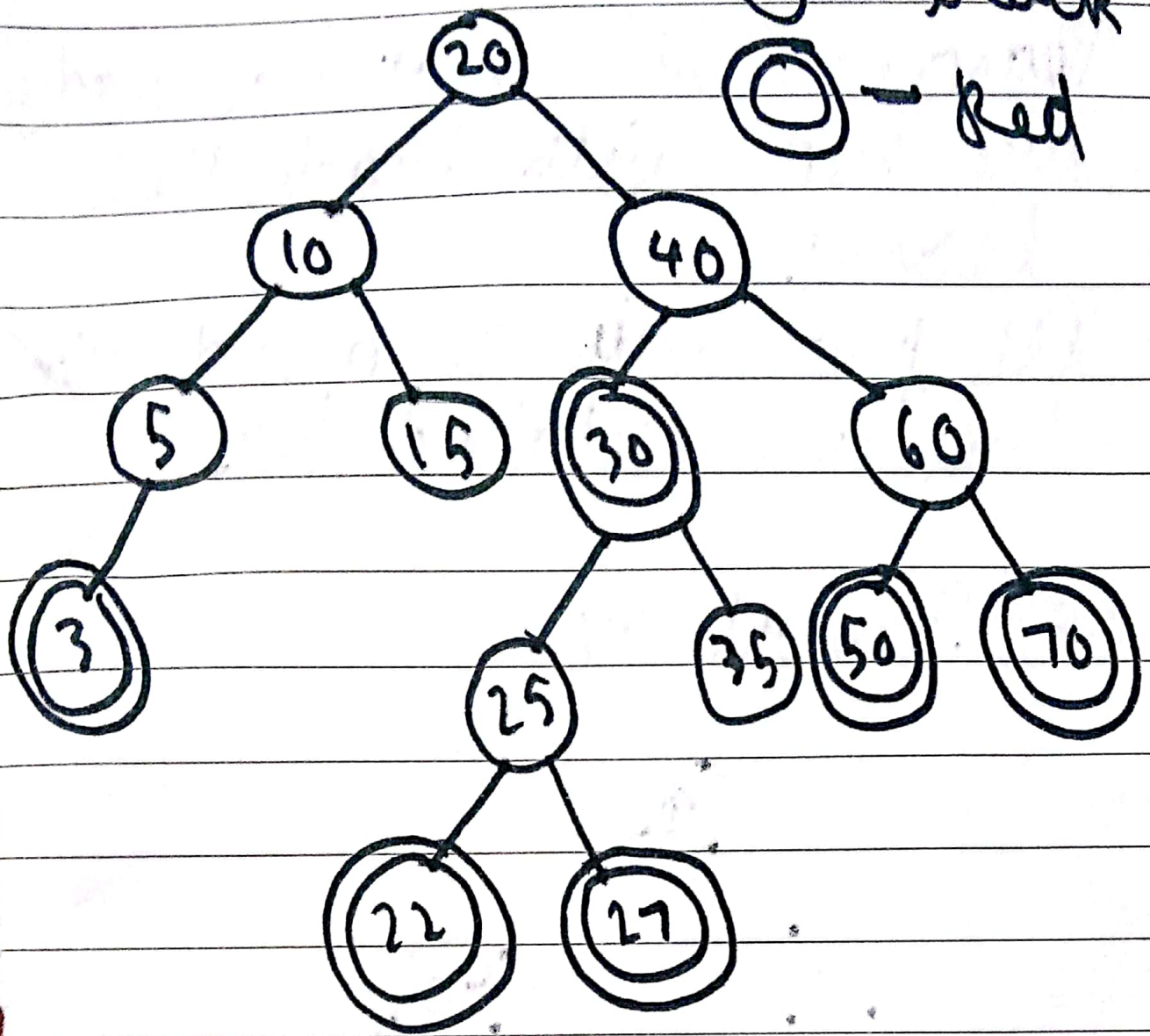
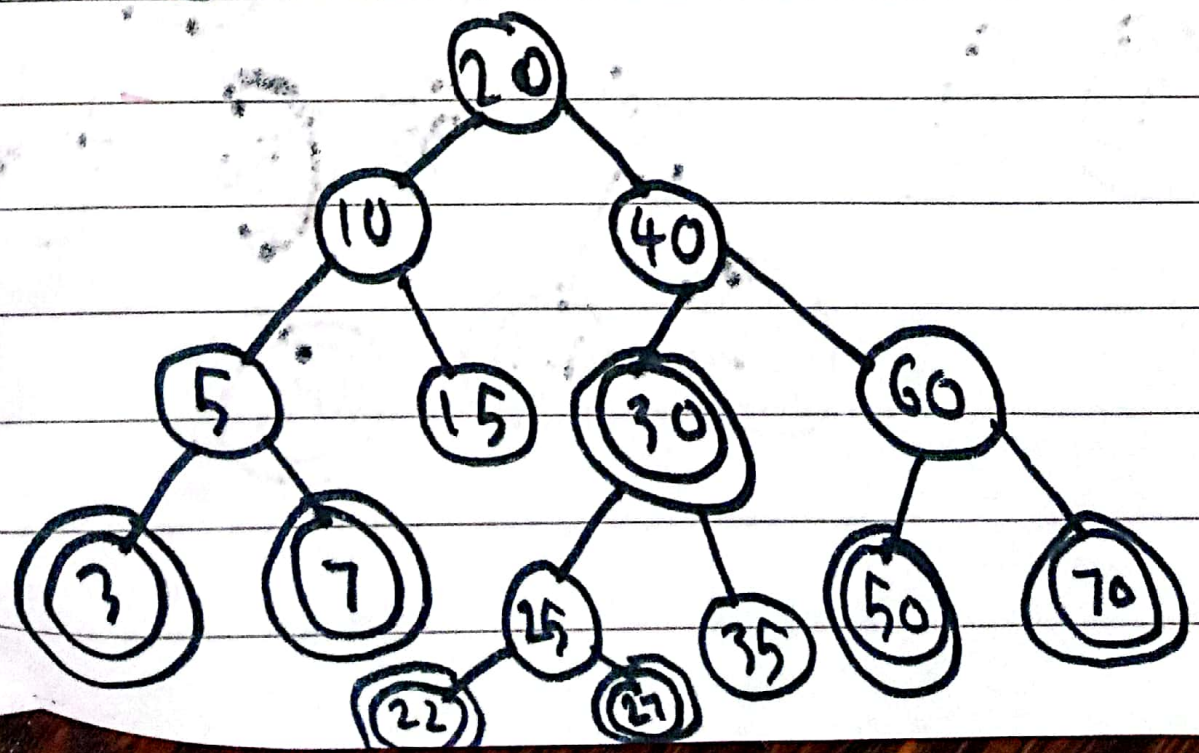


○ - black  
⊖ - red



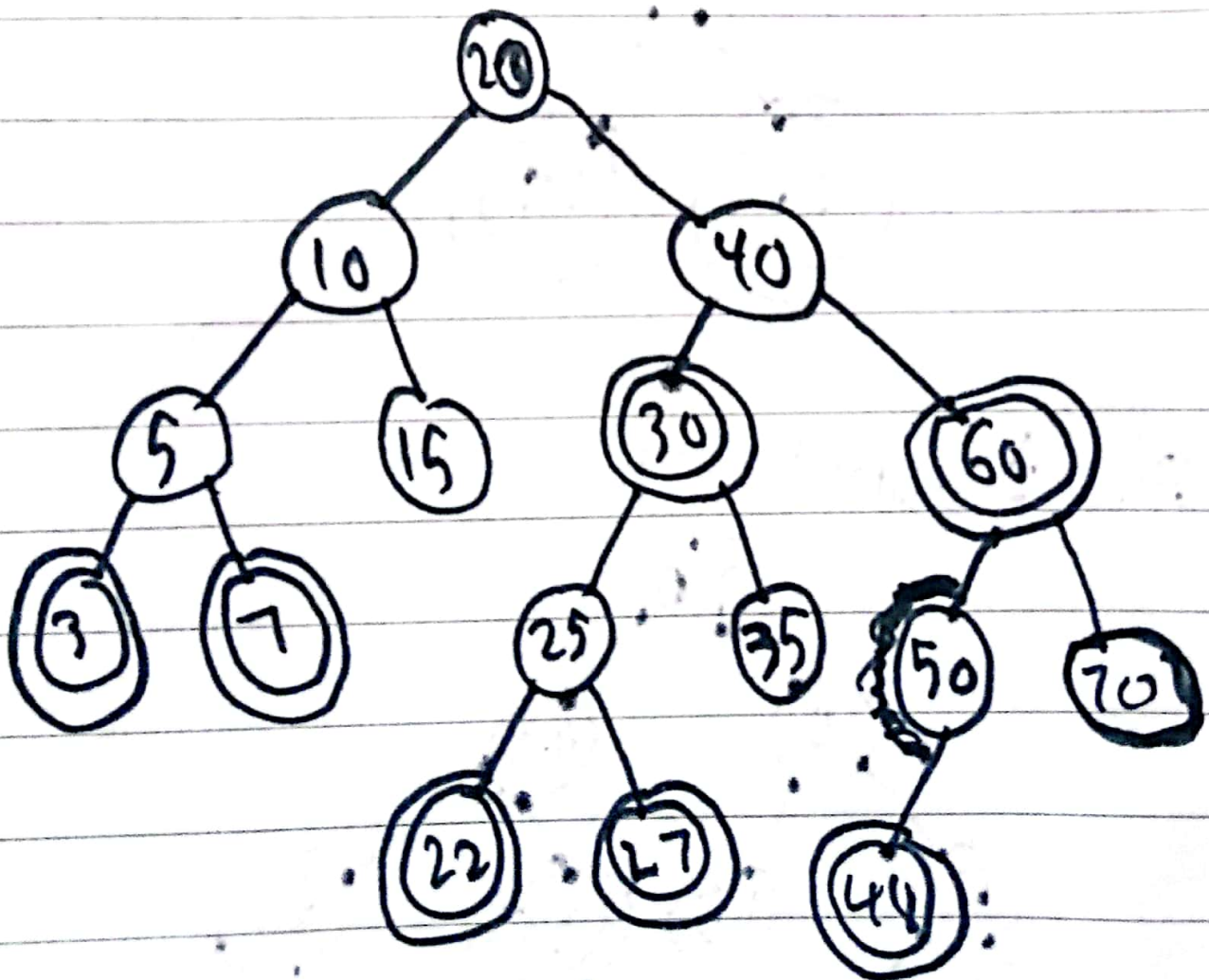
(10) Insert 7



Reason:- All new leaf nodes are red with block NIL leaves.

All properties of a red-black tree are retained here.

(b) Insert 48.

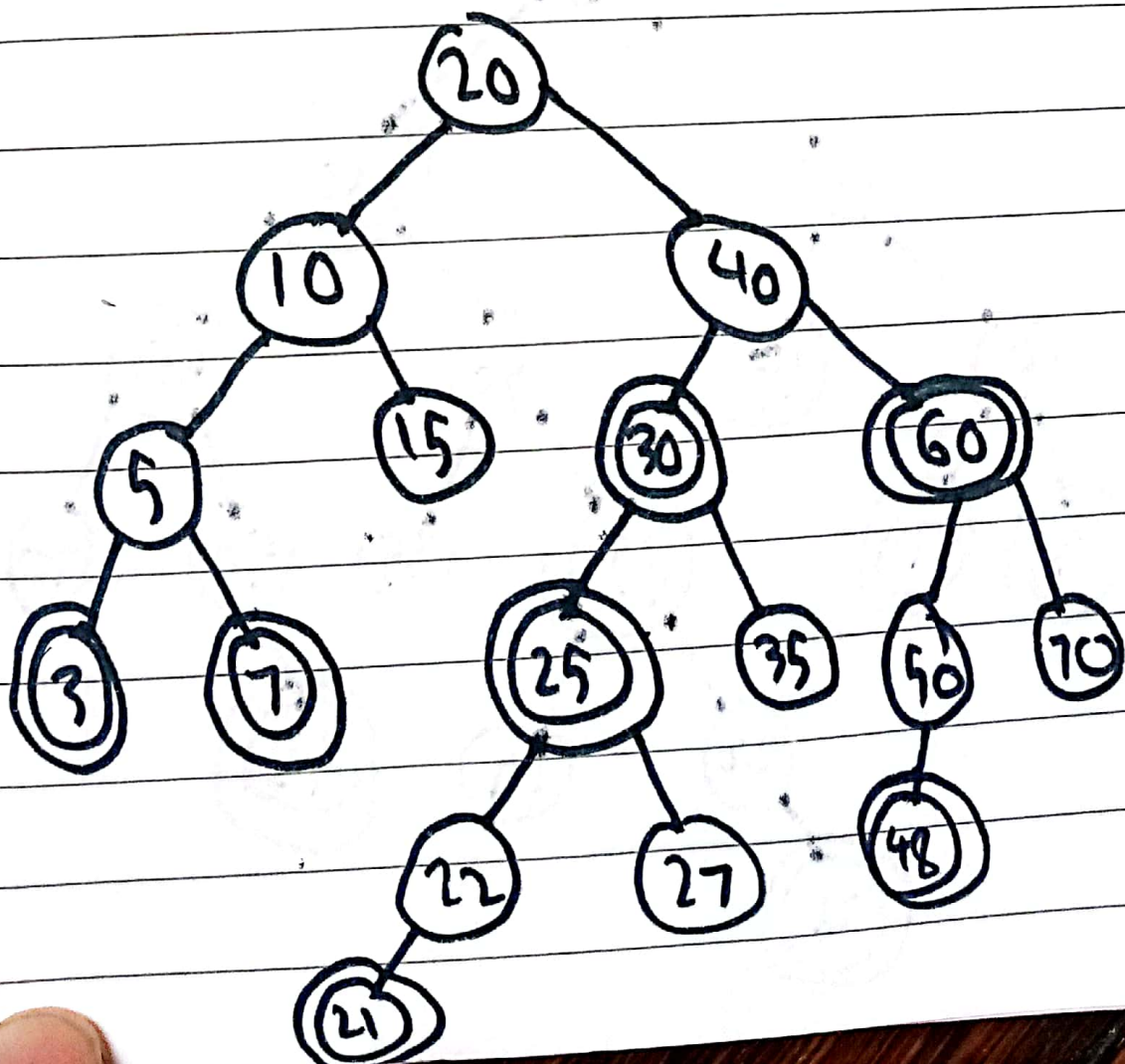


Note:- nodes 50 & 70 are black.



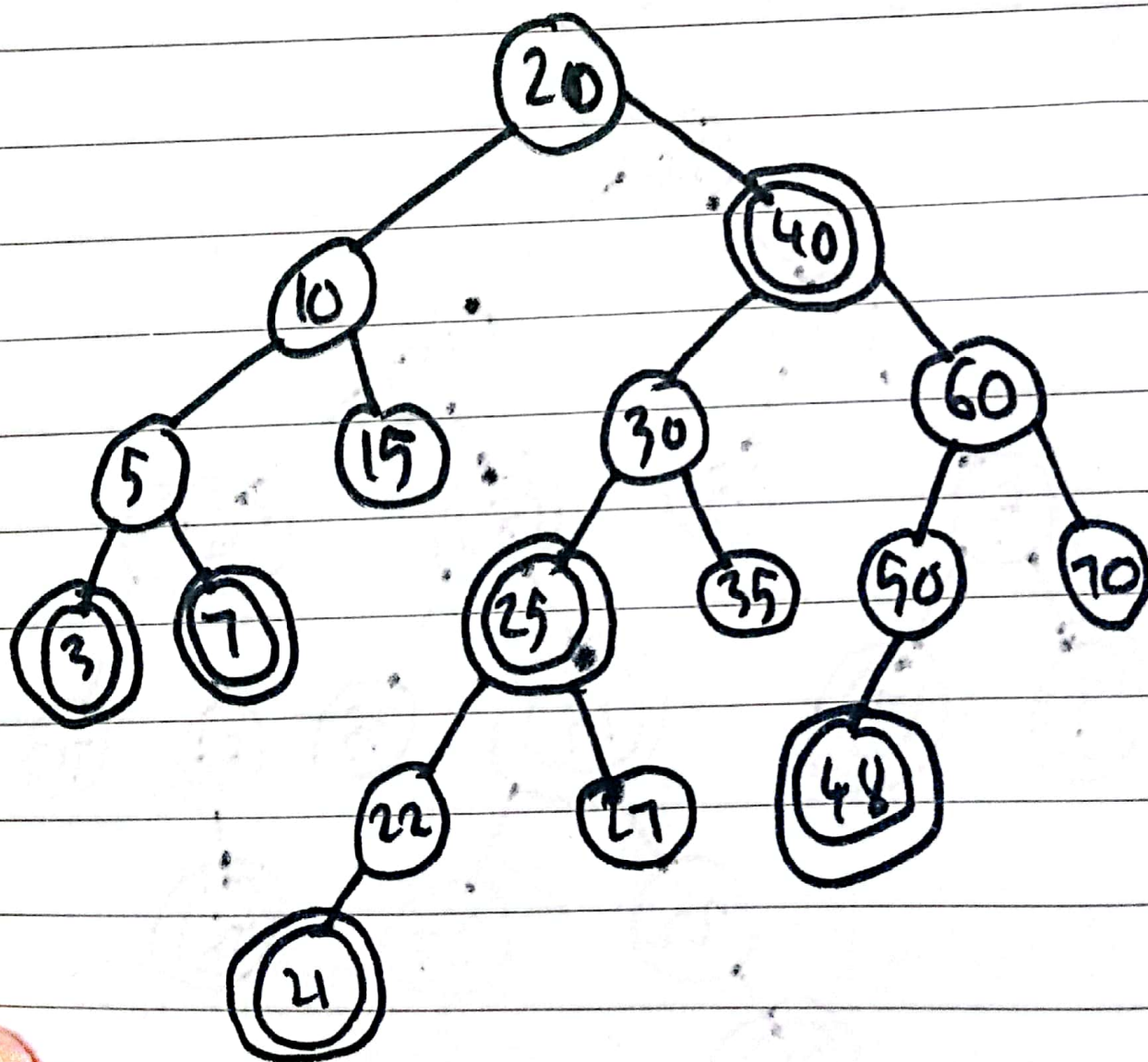
Reason:- Uncle of 48 was red, so we changed the grandparent to red and changed the parent and uncle to black to retain the red-black tree's properties.

(c) Insert 21



Reason - 21's uncle and  
parent were red, so  
grandparent was changed  
to red and parent and  
uncle were changed to  
black.

Next step:-





Reason :- 29, a red node  
had red parent and  
uncle, so they were  
changed to black and  
its grandparent 40 was  
changed to red.