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subject :- IS LAB.

[illegible]

Alpha - Beta Pruning :-

Alpha-beta pruning = Alpha beta pruning is a modified version of the min max algo. It is an optimization technique of the min max algo.

→ Alpha (α) = The best (highest value)
= Initial value of alpha is $-\infty$

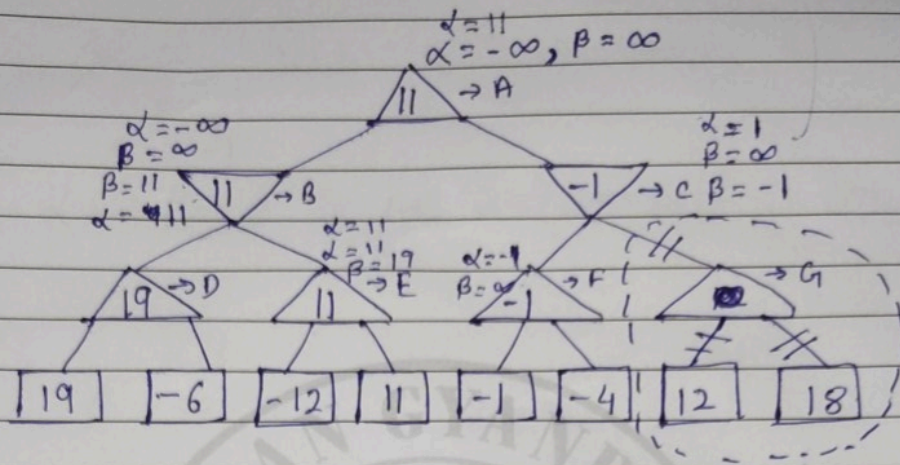
→ Beta (β) = The best (highest value)
= Initial value is Beta is $+\infty$.

→ Rules of conditions.

- ① The max player will only update the value of alpha.
- ② The min player will only update the value of β .
- ③ We will only pass the alpha, beta values of the child nodes.
- ④ Node values will be passed to upper nodes instead of values of alpha and beta.

- Condition to prune : $a \geq b$ or $b \leq a$

- When alpha is greater than or equal to beta.



1.) $\alpha(-\infty, 19) = 19$

$\alpha(-\infty, -6) = -6$ - Max (Bottom left)

$\alpha(19, -6) = 19$

2.) $\beta(\infty, 19) = 19$ - Min (left)

3.) $\alpha(-\infty, -12) = -12$

$\alpha(-\infty, 11) = 11$

- Max (Bottom left)

$\alpha(-12, 11) = 11$

(left node)

4.) $\alpha(-12, -1) = -1$

- Top (max)

5.) $\beta(19, 11) = 11$

- min (right)

6.) $\beta(-\infty, 11) = 11$

- Max (Bottom right) (right node)

7.) $\alpha(11, -1) = 11$

$\alpha(11, -16) = 11$

$\alpha(-1, -4) = -1$

8.) $\beta(\infty, -4) = -4$ - min (right)

$\alpha = 11$

$\beta = -1$

$\alpha \geq \beta$ so the next node is pruned.

9.) $\alpha = 11$

Max.

$\beta = \infty$

$\alpha(11, -1) = 11$

solution.

