Name:_____ Roll Number:_____

Quiz-2

Max Marks: 20 **Max Time: 20 mins**

Q.1. [6 Marks]

Mark True (T) or False (F), fill in the blanks, or choose the correct choice for the statements below.

1. Global admissibility of a heuristic follows from its local consistency.

(A) True (B) False

2. 0-1 knapsack problem using Hill Climbing algorithm always returns the optimal solution.

(A) True (B) False

3. α-cut off occurs at MIN nodes 'n' where the $\beta(n) \leq \alpha(i)$ for some ancestor 'i' of node 'n'.

(A) True (B) False

4. For pruning redundant branches in game trees, $\alpha > \beta$.

(A) True (B) False

5. Ply depth in a game tree can be fixed dynamically depending on the compute resources and the quiescence of the explored states.

(A) True (B) False

6. In the worst case, using alpha-beta method, the search can take:

(A) the same amount of time as Minimax (B) half the time as that for Minimax (C) different time but the same memory as for Minimax (D) None of the given choices

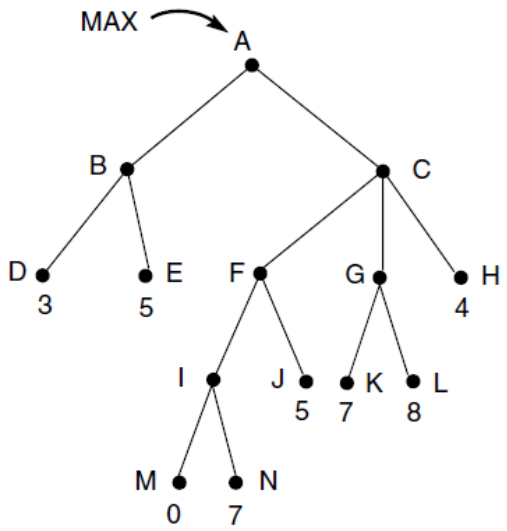
Q.2. [5+5+4 marks]

a) For the game tree shown below, run minimax algorithm to show the move that MAX selects.

Ans.

A to C.

Name:_____ Roll Number:_____



b) Run α-β search on the above tree and show unconsolidated and final (α,β) pairs for each node in the table below following scenarios.

i) When the tree is searched from left to right
ii) When the tree is searched from right to left

Ans. Final values are highlighted. 'i' stands for 'infinity'.

Left to Right

Node	**(α,β)**
A	(-i,+i),(3,+i),(4,+i)
B	(-i,+i),(-i,3)
C	(3,+i),(3,5),(3,4)
F	(3,+i),(5,+i)
I	(3,+i),(3,0)
G	(3,5),(7,5)

Right to Left

Node	**(α,β)**
A	(-i,+i),(4,+i)
C	(-i,+i),(-i,4)
G	(-i,4),(8,4)
F	(-i,4),(5,4)
B	(4,+i),(4,5),(4,3)

Name:_____ Roll Number:_____

c) Why does a different pruning occur when choosing left to right or right to left?
Ans.

A different pruning occurs due to different heuristic values the algorithm encounters while exploring the search space from left to right or from right to left.