CE- 4th Sem
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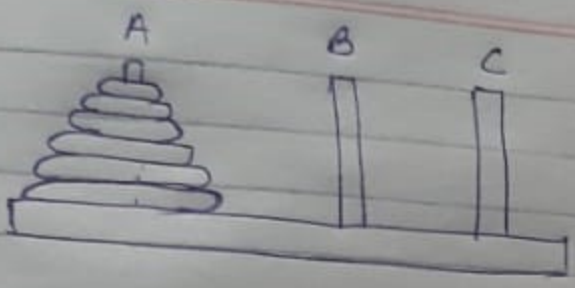
Section-2

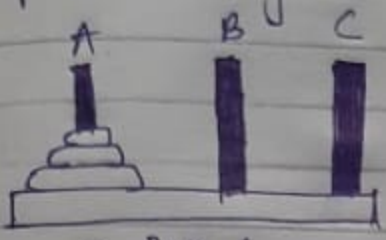
Ans-2 a) The Tower of Hanoi (also called the Tower of Brahma or Lucas' Tower and sometimes pluralized as Towers) is a mathematical game or puzzle. It consist of three rods and a number of disks of different size, which can slide onto any rod. The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:-

1) Only one disk can be moved at a time.
2) Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack i.e. a disk can only be moved if it is the uppermost disk on a stack.
3) No disk may be placed on top of a smaller disk.

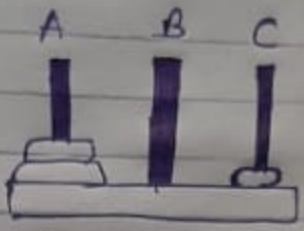
* Suppose three pegs, labelled A, B and C is given and suppose on peg A, there are finite number of n disks with decreasing size.
* The object of the game is to move the disks from peg A to peg C using peg B as an auxiliary.



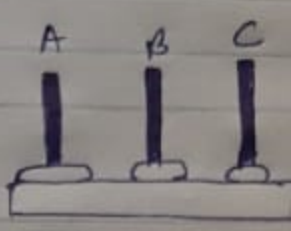
The solution to the Tower of Hanoi problem for $n = 3$.



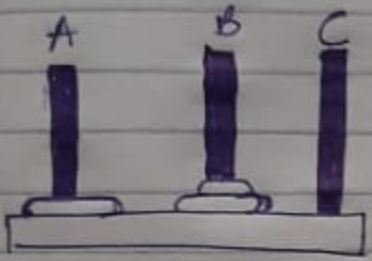
Initial



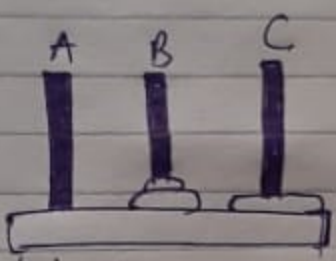
(1) A → C



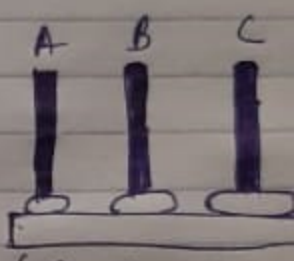
(2) A → B



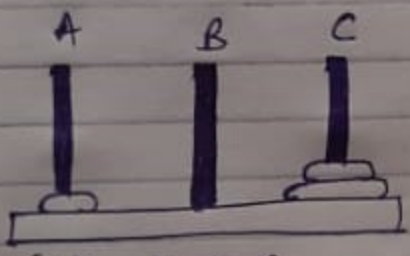
(3) C → B



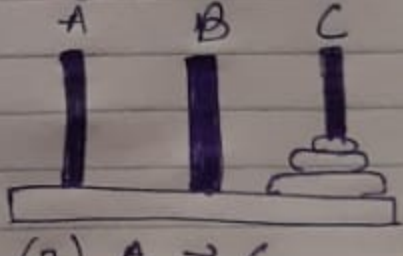
(4) A → C



(5) B → A



(6) B → C



(7) A → C

Total number of steps to solve ~~to~~ Tower of Hanoi problem of n disk
$= 2^n - 1 = 2^3 - 1 = 7$.