(c) let us calculate the sppeed up of the first application running on 80% resources -

speedupF = (1/ ((1-0.4) + (0.4/8)) = 1.54

speedup for second application given 20% resources running only in serial ( put x = 0 in formula)

speedupS = (1/((1 - 0) + (0/2))) = 1

now multiply bby resources available to get the actual excution power like -

overall speedup = 1 / ( 0.2 \* sppedupS + 0.8 \*speedupF)

=1 / ( (0.2 \* 1) + (0.8 \* 1.54) )

= 0.69

(d) similar to (c)

let us calculate the sppeed up of the second application running on 20% resources -

speedupF = (1/ ((1-0.99) + (0.99/8)) = 7.47

speedup for first application given 80% resources running only in serial ( put x = 0 in formula)

speedupS = (1/((1 - 0) + (0/8))) = 1

now multiply bby resources available to get the actual excution power like -

overall speedup = 1 / ( 0.2 \* sppedupS + 0.8 \*speedupF)

=1 / ( 0.2 \* 7.47 + 0.8 \* 1)

=0.43