Question 3.

push()

Just pushes item onto stack.

$c = O(1)$

$\Delta\Phi = (N+1) - N = 1$

amortised cost $= c + \Delta\Phi = O(1) + 1 = O(1)$

pop()

Just pops item off stack.

$c = O(1)$

$\Delta\Phi = N - (N-1) = 1$

amortised cost $= c + \Delta\Phi = O(1) + 1 = O(1)$

flush()

Equivalent to pop() for all N items

$c = O(N)$

$\Delta\Phi = 0 - N = -N$

amortised cost $= c + \Delta\Phi = O(N) - N = O(1)$

□