QUESTION 2

Theorem The sum of any 5 consecutive integers is divisible by 5.

proof: Let a be an arbitrary integer.

$a, a+1, a+2, a+3, a+4$ are 5 consecutive integers.

Let S be the sum of the 5 integers.

$$\begin{aligned} S &= a + (a+1) + (a+2) + (a+3) + (a+4) \\ &= 5a + 10 \\ &= 5(a+2) \end{aligned}$$

That implies S is divisible by 5. It follows that for all a, S is divisible by 5. The proof is complete.