6A: $3\cdot x^{\alpha}$, $2^{k}\cdot y^{\beta}$, z^{γ}, $2\cdot 3^{l}$

x = 5, y = 7, z = 11: γ must be even, otherwise $2\cdot 3^{l} = 11^{\gamma} + 1 = 12\cdot(11^{\gamma-1} - 11^{\gamma-2} + ... + 1)$ would be divisible by 2^2. But then $2^{k}\cdot 7^{\beta} = 11^{\gamma} - 1 = 11^{2\gamma'} - 1 = 121^{\gamma'} - 1 = 120\cdot(121^{\gamma'-1} + ... + 1)$ would be divisible by 3 and 5, contradiction.

x = 5, y = 11, z = 7: $2^{k}\cdot 11^{\beta} = 7^{\gamma} - 1 = 6\cdot(7^{\gamma-1} + ... + 1)$ is divisible by 3, contradiction.

x = 7, y = 5, z = 11: Both $2\cdot 3^{l}$ and $2\cdot 3^{l} - 6 = 3\cdot 7^{\alpha} - 3 = 3\cdot(7^{\alpha} - 1) = 3\cdot 6\cdot(7^{\alpha-1} + ... + 1)$ are divisible by 9, contradiction. (We may and do assume $l \geq 2$.)

x = 7, y = 11, z = 5: as in case x = 7 above.

x = 11, y = 5, z = 7: $2^{k}\cdot 5^{\beta} - 4 = 3\cdot 11^{\alpha} - 3 = 3\cdot(11^{\alpha} - 1) = 3\cdot 10\cdot(11^{\alpha-1} + ... + 1)$ is divisible by 5, contradiction.

x = 11, y = 7, z = 5: α must be even, otherwise $2\cdot 3^{l} = 3\cdot 11^{\alpha} + 3 = 3\cdot(11^{\alpha} + 1) = 3\cdot 12\cdot(11^{\alpha-1} - 11^{\alpha-2} + ... + 1)$ would be divisible by 2^2. But then both $2\cdot 3^{l}$ and $2\cdot 3^{l} - 6 = 3\cdot 11^{\alpha} - 3 = 3\cdot(11^{\alpha} - 1) = 3\cdot(11^{2\alpha'} - 1) = 3\cdot(121^{\alpha'} - 1) = 3\cdot 120\cdot(121^{\alpha'-1} + ... + 1)$ would be divisible by 9, contradiction. (Again we may and do assume $l \geq 2$.)