Calculate the heat units for a chest x-ray that uses the following exposure factors: 200 mA 0.6 seconds and 70 kvp. The machine is a three phase, 6 pulse generator.

Solution:

For three phase, 6 pulse generator, the waveform factor is $w = 0.96$.

kV_p is the thousands of volts peak

$$E_{heat} = w \cdot kV_p \cdot mA \cdot t = 0.96 \cdot 70kV_p \cdot 200mA \cdot 0.6sec = 8064J$$

We have, 1.4HU=1J, whence $8064J = 1.4 \cdot 8064 = 11290\ HU$

Answer: $11290\ HU$