

$$(a) \quad \varepsilon = \frac{\dot{W}_T}{\dot{m}(a_{f4} - a_{f5})} = \dots = \frac{\dot{W}_T}{\dot{m}[(h_4 - h_5) - T_0(a_4 - a_5)]}$$

$$= \boxed{0.766}$$

(b) $\eta_T = 0.758 \neq 0.766 = \varepsilon$ FROM EXERGETIC STANDPOINT
ACTUALLY DOING A BIT BETTER.

$$(c) \quad \varepsilon_{HXR} = \frac{\dot{m}_s(a_{f4} - a_{f3})}{\dot{m}_a(a_{f1} - a_{f2})} = \dots = \boxed{0.777}$$

$$(d) \quad \varepsilon = \frac{\dot{W}_T}{\dot{m}_a(a_{f1} - a_{f2})} = \dots = \boxed{0.506}$$

$$(e) \quad \varepsilon_{HXR} \cdot \varepsilon_{TUR} = (0.777)(0.766) = 0.595 \neq 0.506$$

COULD ALSO BE

$$\varepsilon = \frac{\dot{W}_T}{\dot{m}_a(a_{f1} - a_{f2}) - \dot{m}_s(a_{f5} - a_{f3})}$$

$$= \dots = \boxed{0.573}$$