Q1(a) Expected Return = 50%(20%) + 50%(10%)
= 15% ✱

Varience = $(0.5)^2(0.4)^2 + (0.5)^2(0.3)^2$
$+ 2(0.5)(0.5)(0)(0.4)(0.3)$
$= 0.0625$

Votality = $\sqrt{0.0625}$
$= 0.25$
$\approx 25\%$ ✱

(b) No, because by investing in these two stocks equally, you are getting higher returns with lower votality ✱

(c) Yes. There is no other portfolio dominating over Fords Motor hence, it is efficient.

Q2(a) Portfolio Weight (Coke) = $\frac{2}{3}$ ✱
Portfolio Weight (Intel) = $\frac{1}{3}$ ✱

(b) Expected return = $(\frac{2}{3})(6\%) + (\frac{1}{3})(26\%)$
$= 0.126666$
$\approx 12.67\%$ ✱

Q3. Portfolio A Sharpe Ratio = $\frac{12\% - 4\%}{8\%}$

$= 1$

Portfolio B Sharpe Ratio = $\frac{20\% - 4\%}{12\%}$

$= 1.333$

From here, we can see that Portfolio B is more efficient than Portfolio A.
∴ Portfolio A is not efficient. ✱

Assuming to invest $00,000,

$\frac{8\%}{12\%} = 0.6667$
$\approx 66.67\%$ ($66670 of $100,000)

The new portfolio is to invest $66670 in Portfolio A and the rest, $33,330 to be invested in risk-free rate.

∴ $66670 at 12% with 8% volatility and $33330 at risk-free rate. ✱

Q4.(a) Sharpe Ratio $= \frac{E[R_p] - r_f}{SD(R_p)}$

$= \frac{20\% - 5\%}{20\%}$

$= 0.75$ *

(b) Sharpe Ratio (Ebay) $= \frac{11\% - 5\%}{40\%}$

$= 0.15$

Correlation $= \frac{0.15}{0.75} = 0.2$ *

(c) Sharpe Ratio (Suboptima) $= 0.8 \times 0.75$

$= 0.6$ *

Q5 (a) Beta $= \frac{0.2 \times 0.06}{0.16}$

$= 0.075$ *

(b) Expected return $= 4\% + 0.075 (10\% - 4\%)$

$= 0.0445$

$\approx 4.45\%$ *