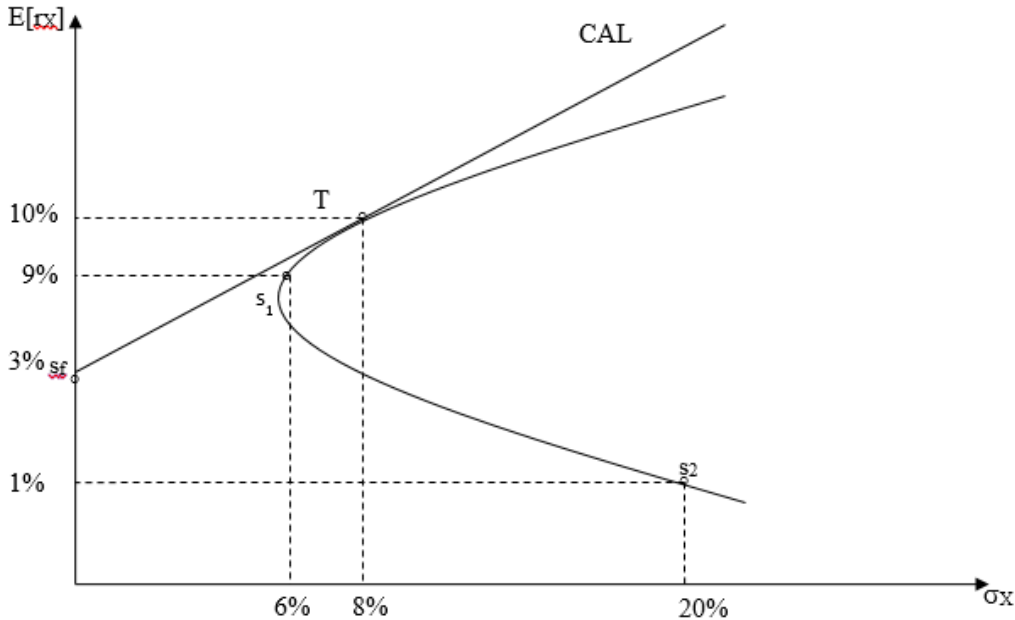**Name:** _____

Consider an economy with two risky assets and one risk free asset ($S=\{s_1, s_2, s_f\}$). The following graph depicts the three assets as well as the CAL whose equation is

$$E[\tilde{r}_X]=r_f +\left(\frac{E[\tilde{r}_T]-r_f}{\sigma_T}\right)\sigma_X$$

Answer questions (a) (b) and (c) according to the graph

a) What is the expected return of an efficient portfolio that has a standard deviation of return of 7%?
☐ 10.001%   ☐ **9.125%**   ☐ 7.125%   ☐ 18.536%

b) What is the composition $\{x_1, x_2, x_f\}$ of the tangent portfolio?
☐ {0.9, -0.3, 0.4}
☐ **{1.125, -0.125, 0}**
☐ {1.4, -0.4, 0}
☐ {-.2, 1.2, 0}

c) There are two mean-variance investors with different risk aversion coefficients. Which of these propositions is wrong?
☐ Both investors choose their portfolios on the Capital Allocation Line
☐ None of the two investors sells short the tangency portfolio
☐ The two investors invest different fractions of their wealth in Asset 1
☐ **The investor invest the same fractions of their wealth in Asset 1 but different fractions of their wealth in Asset 2**

d) Consider a market that consists of only two risky assets A and B for which $\rho_{A,B} = -1$ and the assets expected return are 10% and 25%, respectively. The standard deviation of the returns are 10% for Asset A and 20% for Asset B. If shorts-sales are not allowed in this market, the minimum variance portfolio has a standard deviation of
☐ **0%**   ☐ 10%   ☐ 15%   ☐ 20%

e) The market consists of two risky assets. A and B and risk-free asset F. The tangency portfolio contains 40% of asset A and 60% of asset B. Short-sales are allowed. Investors invest only in efficient portfolios. Which one of the following statements is correct?
☐ Every investor will invest in A and B only.
☐ No investor will invest in F only.
☐ **No investor will invest in A and F only.**
☐ Every investor will invest in A,B and F.