Question 1- Fixed income: Answers **(30 points)**

a)

- Default risk of the company
- Spread risk: risk of change in the spread due to changes in ratings or new information regarding the company, or due to changes in the conditions of the bond market.
- Liquidity risk: risk that liquidity is not as envisioned when trading becomes necessary
- …

b)

Following table 1, the automaker company cannot go bankrupt before three years time [because at worst during the first two years we have: T=0: AA, T=1: BBB, T=2: B]. The possible paths of ratings towards default are:

AA→BBB→B→Default,	with probability	$1\% \cdot 1\% \cdot 35\% = 35(\%)^3$
AA→BBB→BB→Default,	with probability	$1\% \cdot 20\% \cdot 1\% = 20(\%)^3$
AA→A→BB→Default,	with probability	$9\% \cdot 1\% \cdot 1\% = 9(\%)^3$

$\Rightarrow$ Total probability of default = $[35+20+9](\%)^3 = 64(\%)^3 = 0.0064\%$

c)

The yield on a 2-year government bond is 3% and the spread for a 2-year BBB rated bond is 90 bp, therefore the yield on the bond is 3.90%. With an annual coupon of 2.3% (annual payment) and 2 years to maturity, the bond price is:

$$P = \frac{2.3}{1.039} + \frac{102.3}{1.039^2} \cong 96.978$$

The rate of return on investment is: $\frac{(2.3 + 96.98) - 100}{100} \cong -0.722\%$

d)

The expected rate of return is calculated as rating-probability-weighted average of the rate of return in one year for each rating:

Rate of return	Probability	
AAA rating	0.677%	1%
AA rating	0.489%	89%
A rating	0.207%	9%
BBB rating	-0.722%	1%

$0.01 \cdot 0.677\% + 0.89 \cdot 0.489\% + 0.09 \cdot 0.207\% + 0.01 \cdot (-0.722\%) = 0.453\%$

e)

For example, following factors would be adequate:

- Corporate bonds have a liquidity premium because they are less liquid than government bonds
- There is a risk premium for fluctuations in the rate of return due to changes in rating

or default

- There is a premium because of uncertainty over the ratings and default forecasts themselves
- It is possible that the XYZ Credit Analysis Team's forecast is different from the market's
- The automaker Company’s bond may have a higher potential for downgrading or default than the ratings change forecast indicates