Entrepreneurial Finance and Venture Capital In class Test 1 March 14th, 2025

Name

Number

WRITE YOUR NAME AND NUMBER IN ALL PAGES

This test consists of 4 questions. You have <u>75 minutes</u>. This is a closed book test. Calculators are allowed. **Good luck!**

Question 1: Multiple choice (6 points each)

CHECK ALL ANSWERS THAT APPLY for full credit; there may be more than one per question

No explanation needed

- A. Which of the following balance sheet items does asset intensity decrease with? (7 points)
 - i. Net Property, Plant and Equipment
 - ii. Accounts receivable
 - iii. Accounts payable
 - iv. None of the above
- B. The high discount rates used in the VC method differ from the standard CAPM cost of capital because (7 points)
 - i. CAPM discount rates incorporate idiosyncratic risk
 - ii. VC discount rates incorporate systematic risk
 - iii. VC discount rates account for the probability of failure
 - iv. None of the above
- C. If a startup has positive asset intensity, the faster it grows the more external funding it needs
 - i. True
 - ii. False

D. Relative to the average fund, the best-performing VC funds:

- i. Have more failures (a higher share of investments losing money)
- ii. Have more hits (a larger share of investments making >10x returns)
- iii. Have bigger hits (a larger average multiple on the investments that make >10x returns)
- iv. None of the above

ANSWER:

A_____

В_____

C_____

D_____

Question 2

Suppose a startup has initial sales of 4 million. On its balance sheet, it has operating current assets of 5 million, operating current liabilities of 3 million, and net property, plant and equipment worth 1 million. It also holds short-term debt of 3 million. EBIT is 0.625 million, and the tax rate is 20%.

A. Calculate asset intensity and profitability. (7 points)

B. Assume sales will double every year for three years and then the startup will be sold. Profitability and asset intensity will remain constant. How much additional external funding will the firm need before it is sold? (7 points)

Question 3

A VC is planning to invest 12 million for 25% of a startup in a series A round. The VC is projecting the company will be sold in 4 years and targeting an IRR of 40%. There were 1 million shares outstanding before the deal.

A. If the company will not require additional funding, what value is the VC projecting the company will be sold for? (7 points)

B. What are the pre and post-money valuation of the series A round if the VC invests on these terms? (7 points)

C. How many shares will the VC get? What is the implied share price of the series A round? (7 points)

D. Suppose now that the deal also includes the creation of an option pool. The pool will be created *before* the VC invests and be worth 15% of the company *after* the series A is finalized. What is the share price of the series A? (7 points)

E. Suppose now that the company will require an additional round of funding where another investor will take a 20% stake. The first VC *correctly anticipates this* and still asks for a 25% series A stake. If the VC is still targeting a 40% IRR, what value is the VC now projecting the company will be sold for? (7 points)

Question 4

You have the opportunity to invest in one of the following two projects (you can assume a discount rate of zero throughout):

	Project A	Project B
Investment required	10M	10M
Probability of success	5%	30%
Present value if successful	700M	120M
Present value if unsuccessful	0	0

A. If both projects take the same time to complete, which one has the highest IRR *conditional on success*? (6 points)

B. Which one has the highest expected value? (7 points)

C. Suppose now that you can stage your investment. In either project, you can first invest 2 million to run an experiment and then decide whether to invest the remaining 8 million. If the experiment is successful, the probability of success of either project increases to 50%. The probability that the experiment itself is successful is 10% for project A and 60% for project B, which implies that the unconditional probability of success for both projects remains unchanged at 5% and 30%, respectively. Which one has the highest expected value now? (7 points) Why is the experiment more valuable for one of the projects? (7 points)

Draft paper