

# Investment Management



AZERBAIJAN STATE  
UNIVERSITY OF ECONOMICS

## Final-exam questions 1

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# The Net Present Value



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## Questions:

1. How much
  - a. would you need to invest today at an annual compound interest rate of 5% in order to have £606.38 in two years time?
  - b. would be the future value of £350 if it were invested today at an annual compound interest rate of 8% for 6 years?
2. What is the present value of an 8 year annuity of £45 per year if the discount rate is 7% and the first payment is received three years from now?

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## Questions:

3. A project has the following cash flows:

Time	0	1	2	3
Cash Flow (£)	-400	100	100	50

What is the NPV of the project if the firm uses a discount rate of 6.7%? Should the project be accepted?

4. What is the Future Value of \$100 invested today and received in:
- Year 10 (at a discount rate of 1%)
  - Year 10 (at a discount rate of 13%)
  - Year 15 (at a discount rate of 25%)
  - Each of Years 1 through 3 (at a discount rate of 12%)

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## Questions:

5. What is the net present value of a firm's investment in a U.S. Treasury security (face value of \$ 1,000) yielding 5% and maturing in one year? (Hint: if we ignore tax the OCC = 5% as well)
6. A parcel of land costs \$500,000. For an additional \$800,000 you can build a motel on the property. The land and motel should be worth \$1,500,000 next year. Suppose that common stocks with the same risk as this investment offer a 10% expected return. Would you construct the motel? Why and why not?

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## Questions:

7. A factory costs \$800,000. You reckon that it will produce an inflow after operating costs of \$170,000 a year for 10 years. If the opportunity cost of capital is 14% what is the NPV of the factory? What is the PV of the factory at the end of the 5th year?
8. What is the PV of \$100 received in:
  - a. Year 10 (at a discount rate of 1%)
  - b. Year 10 (at a discount rate of 13%)
  - c. Year 15 (at a discount rate of 25%)
  - d. Each of Years 1 through 3 (at a discount rate of 12%)

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## Questions:

9. Which would you prefer? (a) An investment paying interest of 12% *compounded annually*? (b) An investment paying interest of 11,7% *compounded semi-annually*? (c) An investment paying interest of 11,5% *continuously compounded*? [Assume the amount invested is \$1 and work out the value of each investment after 1 year].
  
10. Which would you prefer? (a) An investment paying interest of 12% *compounded annually*? (b) An investment paying interest of 11,7% *compounded semi-annually*? (c) An investment paying interest of 11,5% *continuously compounded*? [Assume the amount invested is \$1 and work out the value of each investment after 5 years].

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## Questions:

11. Which would you prefer? (a) An investment paying interest of 12% *compounded annually*? (b) An investment paying interest of 11,7% *compounded semi-annually*? (c) An investment paying interest of 11,5% *continuously compounded*? [Assume the amount invested is \$1 and work out the value of each investment after 20 years].
12. Consider the following projects:

Project	Cash Flows (\$)					
	C0	C1	C2	C3	C4	C5
A	-1,000	1,000	0	0	0	0
B	-2,000	1,000	1,000	4,000	1,000	1,000
C	-3,000	1,000	1,000	0	1,000	1,000

- a. If the opportunity cost of capital is 10%, which projects have a positive NPV?

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## Questions:

13. Suppose that you will receive annual payments of £10,000 for a period of 10 years. The first payment will be made four years from now. If the interest rate is 5%, what is the present value of these payments?
14. You have won a competition and can choose how you take your prize. Which option would you prefer? Assume an interest rate of 7%.
  - a. £1000 today
  - b. £1300 in three years
  - c. £140 a year for 10 years (first payment in one year)
  - d. £75 a year forever (first payment in one year)



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## Questions:

15. A 10-year German Government bond has a face value of €100 and an annual coupon rate of 5%. Assume that the interest rate is 6% per year.
  - a. What is the PV of the bond?
  - b. Suppose that this bond makes coupon payments semi-annually like a US bond (the bond would pay 2.5% every six months). What is the PV in this case?
  
16. Horse & Buggy Plc is in a declining industry. Sales, earnings and dividends are all shrinking at a rate of 10% per year.
  - a. If the return on equity is 15% and the next dividend is £3, what is the current share price?
  - b. What do you expect the share price to be in one year?

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## Questions:

17. Bull Corporation has a ROE of 20%. It has a plowback ratio of 0.3 and its earnings this year will be £4 per share. Assuming shareholders require a return of 12%
  - a. What is the current share price?
  - b. What is the current Price-Earnings-Ratio (PER)?
  
18. Pilk Plc has just paid a dividend of \$2. It expects this to grow at 20% for three years. From then on it expects growth at a constant rate of 4%. Assuming the shareholders have a required rate of return of 15%, what is the stock price?

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19. Provide 4 examples of agency problem between managers and shareholders.
20. What is an annuity? What is a perpetuity? Provide formulas.
21. How project can be evaluated using the Net Present Value rule. Provide formulas.
22. Write down drawbacks of the Internal Rate of Return rule.
23. Provide 4 examples of cash flows which must be included when evaluating the project.
24. What is a bond? How we calculate the present value of a bond. Provide formulas.
25. Why managers need to understand how to value a firm's stock?.