

# AS201 - Final Exam Part 2

Semester 141

Name: \_\_\_\_\_

ID: \_\_\_\_\_

- All working must be shown.
- Points will be deducted for unreadable writing or incomplete answers.
- Approved calculators may be used, but all solutions must be explained fully. You must indicate where in the calculations you used a calculator. No points will be given for unexplained numerical answers, even if they are correct.
- Points can be deducted for inaccuracy.
- All questions are worth equal points.

Question	Score
1.	
2.	
3.	
4.	
5.	
Total	

1. Suppose the effective interest rate of an investment is 4% per annum.

(a) Calculate the equivalent discount rate.

(b) Calculate the equivalent force of interest.

(c) Calculate the equivalent nominal interest rate compounded monthly.

2. A loan of \$20,000 was paid back over 20 years by paying a constant payment of \$120 at the beginning of each month (starting at time=0). What was the nominal annual interest rate compounded monthly?

3. A loan of \$10,000 was paid off over five years at an interest rate of 5%. The loan was amortised by paying a constant amount of principal, as well as interest due, at the end of each year. What was the average amount of interest paid per year over the five years.

4. A \$1000 bond with semiannual coupons matures in 10 years. The coupon rate is 6% annually. It sells for \$950. What is its yield rate?

5. An investor wants to invest in stock index options. A 1300-strike put option costs \$35 and a 1500-strike call option costs \$50. Both options mature in one year, during which the risk-free interest rate is 2%. An investor buys one of each option. For what values(s) of  $S_1$  (the spot price of the index in one year) will the investor break even?