

**Question 1 [10 points]:** Round numerical final answers to two decimal places (i.e. \$123.45, 7.89%, etc.)

(a) Find the interest  $I$  charged and the amount  $A$  due if \$400 is borrowed for 9 months at 12% simple interest.

[2]

(b) \$200 is placed in a savings account paying 4% per annum compounded monthly. How much is in the account after 7 months?

[2]

(c) A bank advertises that it pays  $3\frac{3}{4}\%$  interest compounded daily. What is the effective rate of interest?

[3]

(d) How much should be invested today at 5% compounded continuously in order to have \$637 in three years time?

[3]

**Question 2 [10 points]:** Round numerical final answers to two decimal places (i.e. \$123.45, 7.89%, etc.)

(a) How long will it take money invested at 8% compounded quarterly to double in value?

[3]

(b) At what interest rate compounded semi-annually will money double in 10 years?

[3]

(c) Which is the better loan:

- (i) \$5000 for 4 years at 12% simple interest, or
- (ii) \$5000 for 4 years at 10% compounded monthly?

[4]

**Question 3 [10 points]** Round numerical final answers to two decimal places (i.e. \$123.45, 7.89%, etc.)

- (a) \$250 is deposited at the end of each month into an account earning 6.5% interest compounded monthly. What is the total value of the account at the end of 30 years?

[3]

- (b) How much must be deposited at the end of each year into an account earning 9% compounded annually in order to have \$1,000,000 at the end of 35 years?

[3]

- (c) How many years will it take to save \$1,000,000 if you place \$1000 per month into an account earning 7% compounded monthly?

[4]

**Question 4 [10 points]** Round numerical final answers to two decimal places (i.e. \$123.45, 7.89%, etc.)

- (a) To save for a child's university education, parents make a \$2000 deposit the day their child is born followed by \$600 deposits every three months. If all deposits are made to a fund paying 5% interest compounded quarterly, how much will be in the fund when the final payment is made on the child's 18'th birthday?

[5]

- (b) Lenny and Carl have a plan to retire in ten years time and they each wish to have \$100,000 saved by retirement day. Lenny starts making deposits at the end of each month into a fund earning 5% interest compounded monthly and continues these deposits for the full ten years. Carl waits three years before starting his monthly deposits, but finds a fund which earns 7% interest compounded monthly. Who has the larger monthly payment, Lenny or Carl?

[5]

**Question 5 [10 points]:** A company produces two types of steel. Type 1 requires 2 hours of melting, 4 hours of cutting, and 10 hours of rolling per ton. Type 2 requires 5 hours of melting, 1 hour of cutting, and 5 hours of rolling per ton. Forty hours are available for melting, 20 for cutting, and 60 for rolling. Each ton of Type 1 produces \$240 profit and each ton of Type 2 yields \$80 profit. Determine the maximum profit.

Keep your work organized: define your variables, list all required inequalities, neatly draw any required graphs (use graph paper on the next page) and clearly show your work when determining corner points. State a clear conclusion.

Question 5 (continued):

