

Concordia University
Department of Mathematics and Statistics

Course	Number	Section	
MATH	208	All	
Examination	Date	Time	Page
Mid Term	May 2011	1 Hour 30 minutes	2
Instructor	Course Examiner		Marks
D. Dryanov, L. Dube & U. Tiwari	D. Sen		60
Special Instructions:	Answer ALL questions.		

Formulae:

$$A = P(1 + i)^n, A = Pe^{rt}, FV = PMT \frac{(1 + i)^n - 1}{i}, PV = PMT \frac{1 - (1 + i)^{-n}}{i}$$

[10] Q 1. A small company manufactures picnic tables. The weekly fixed cost is \$1,200 and the variable cost is \$45 per table. Find the total daily cost of producing x picnic tables. How many picnic tables can be produced for a total weekly cost of \$4,800?

[10] Q 2. Solve for x in the following equations:

(a) $4^{5x-x^2} = 4^{-6}$

(b) $16^{x-1} = 4^{1+x}$

(c) $3 \log_b 2 + \frac{1}{2} \log_b 25 - \log_b 20 = \log_b x$

(d) $\log_a x + \log_a(x + 1) = \log_a 6$

[10] Q 3. A person borrows \$3,600 and agrees to repay the loan in monthly installments over a period of 3 years. The agreement is to pay 1% of the unpaid balance each month for using the money and \$100 each month to reduce the loan. What is the total cost of the loan over the 3 years?

[10] Q 4. Parents have set up a sinking fund in order to have \$140,000 in 15 years for their children's college education. How much should be paid semiannually into an account paying 6.8% compounded semiannually?

- [10] **Q 5.** American Express's online banking division offered a money market account with an annual percentage yield (APY) of 5.65%.
- (a) If interest is compounded monthly, what is the equivalent annual nominal rate?
 - (b) If a company wishes to have \$1,000,000 in this account after 8 years, what equal deposit should be made each month?
- [10] **Q 6.** If you buy a television set for \$800 and agree to pay for it in 18 equal monthly payments at 1.5% interest per month on the unpaid balance.
- (a) How much are your payments?
 - (b) How much interest will you pay?

Good Luck!