

King Fahd University Of Petroleum & Minerals  
Math 131 - Term 032

Quiz #3

Section: 1 & 6

Name:

ID:

Serial:

**Q1(6 Points):** given an interest rate of 8% compounded semiannually, find the present value of an annuity of \$1000 at the end of each six months for three years and \$1500 thereafter at the end of each six months for four years.

$r = 0.08/2 = 0.04$

$$A = 1500 a_{\overline{14}|0.04} - (1500 - 1000) \cdot a_{\overline{6}|0.04}$$

$$\approx 1500(10.563123) - 500(5.242137)$$

$$\approx 15844.68 - 2621.0685 \approx \$13223.6$$

**Q2 (4-Points):**

a) How many different 4-letter words are possible using the word "QUESTION" if no letter is repeated?

$n = 8, r = 4$

Number of different 4-letter words =  ${}^8P_4 = \frac{8!}{(8-4)!} = \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4!}{4!} = 1680$

b) How many distinguishable permutations of the letters are possible of the word "SUADIARABIA"?

$n = 11, n_1 = 1 = n_2, n_3 = 4, n_4 = 1, n_5 = 2, n_6 = 1, n_7 = 1$

Number of distinguishable permutations =  $\frac{11!}{1! 1! 4! 1! 2! 1! 1!} = \frac{11!}{4! 2!} = 831600$

You may use this table

n	$a_{\overline{n} r}$	$S_{\overline{n} r}$
r	0.04	0.08
3	2.775041	2.577097
4	3.629895	4.506112
7	6.002055	5.20637
8	6.732745	10.63663