Name: KEY **Id#**

ISE 307, Term 153
ENGINEERING ECONOMIC ANALYSIS

Quiz# 2

Date: Monday, August 8, 2016

Q1. The accompanying table shows a cash flow for a company along with CPI:

Year	Cash	CPI	Inflation Rate
0	100,000	179.8	
1	115,000	183.8	=(183.8/179.8)-1=2.22%
2	128,000	188.0	=(188.0/183.8)-1=2.29%
3	145,000	194.6	=(194.6/188.0)-1=3.51%

i. Assuming that year 0 is the base period, determine the inflation rate for each period, and calculate the average inflation rate over the three years.

Average inflation rate over the three years = $(194.6/179.8)^{1/3} - 1 = 2.67\%$

ii. What will be the equivalent cash of year 1 stated in terms of year 3 cash?

= 115,000 (1.0229)(1.0351) = 121,757.3

Q2. Suppose that you borrow $60,000 at 9% compounded monthly over five years. Knowing that the 9% represents the market interest rate, you compute the monthly payment in actual dollars as $1245.51. If the average monthly general inflation rate is expected to be 0.25%, determine the equivalent equal monthly payment series in constant dollars.

$i' = (i-f)/(1+f) \Rightarrow i_m' = (0.09/12-0.0025)/1.0025 = (0.0075-0.0025)/1.0025 = 0.00499$

A = 60,000 (A/P, 0.00499, 60) = 60,000*0.019326 = $1159.55

Q3. Consider the following two mutually exclusive projects:

	Net Cash Flow	
End of Year	Project A	Project B
0	−$1,000	−$1,000
1	$912	$284
2	$684	$568
3	$456	$852
4	$228	$1,136

At an interest rate of 25%, which project would you recommend choosing?

$$\begin{aligned} PW(25\%)_A &= -\$1,000 + \$912(P/F, 25\%, 1) \\ &\quad + \$684(P/F, 25\%, 2) + \$456(P/F, 25\%, 3) \\ &\quad + \$228(P/F, 25\%, 4) = \$494.22 \end{aligned}$$

$$\begin{aligned} PW(25\%)_B &= -\$1,000 + \$284(P/F, 25\%, 1) \\ &\quad + \$568(P/F, 25\%, 2) + \$852(P/F, 25\%, 3) \\ &\quad + \$1{,}136(P/F, 25\%, 4) = \$492.25 \end{aligned}$$

Select project A.