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	180	
1	115,000	184	=(184/180)-1=2.22%
2	128,000	189	=(189/184)-1=2.72%
3	145,000	196	=(196/189)-1=3.70%

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 = $(196/180)^{1/3} - 1 = 2.88\%$

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

$= 145{,}000\ (1.037)^{-1}(1.0272)^{-1} = 136{,}122.4$

Q2. The average starting salary for engineers was $8,000 a year in 1985. John, a mechanical engineer, got an offer for $48,000 a year in 2012. Knowing that the CPIs for 1985 and 2012 are 36.87 and 205.43, respectively, what is John's real salary in terms of constant 1985 dollars?

$f' = (205.43/36.87)^{1/27} - 1 = 0.065686$

John's real salary in terms of constant 1985 dollars = $48{,}000\ (1+0.065686)^{-27} = \$8{,}614.91$

Q3. Consider the following two mutually exclusive investment projects:

Project Cash Flows		
n	A	B
0	−$5,000	−$3,200
1	$2,610	$1,210
2	$2,930	$1,720
3	$2,300	$1,500

At an interest rate of 12%, which project would you recommend choosing?

$$\begin{aligned}
\text{PW}(12\%)_A &= -\$5,000 + \$2,610(P/F,12\%,1) \\
&\quad + \$2,930(P/F,12\%,2) + \$2,300(P/F,12\%,3) \\
&= \$1,303.23 \\
\text{PW}(12\%)_B &= -\$3,200 + \$1,210(P/F,12\%,1) \\
&\quad + \$1,720(P/F,12\%,2) + \$1,500(P/F,12\%,3) \\
&= \$319.2
\end{aligned}$$

Select project A.