Solutions to HW on Fixed Base Year and Chain-Weighted Measures of Output

A. $\frac{1200-1000}{1000} = \frac{200}{1000} = .2 = 20\%$

B. $\frac{2200-2000}{2000} = \frac{200}{2000} = .1 = 10\%$

C. $\frac{.2+.1}{2} = .15 = 15\%$

D. $1000 \times (1+.15) = 1150$

E. Price level in 2005: $P_{2005} = \frac{1000}{1000} = 1$

Price level in 2006: $P_{2006} = \frac{2200}{1150}$

F. $$\pi = \frac{P_{2006} - P_{2005}}{P_{2005}} = \frac{\frac{2200}{1150} - \frac{1000}{1000}}{\frac{1000}{1000}}$$

(On a test, this would be enough to answer the question because I don't allow the use of calculators. This ratio, using long division, is approximately equal to .91 OR 91 percent)

G. Nominal GDP does not depend on the choice of the base year. The growth rate of real GDP does not depend on the choice of the base year. And the rate of inflation is equal to a function of the growth rate of nominal GDP (nominal growth) and the growth rate of real GDP (real growth). Here is why:

$$(1+\pi_{2006}) = \frac{P_{2006}}{P_{2005}} =$$

$$= \frac{\left(\frac{\text{Nominal GDP}_{2006}}{Y_{2006}}\right)}{\left(\frac{\text{Nominal GDP}_{2005}}{Y_{2005}}\right)} = \frac{\left(\frac{\text{Nominal GDP}_{2006}}{\text{Nominal GDP5}_{2005}}\right)}{\left(\frac{Y_{2006}}{Y_{2005}}\right)} = \frac{1+\text{nominal growth}}{1+\text{real growth}}$$

Hence, the inflation rate is equal to a function of nominal GDP growth rate and chain-weighted real GDP growth rate. Since both are independent of the base year, so is the inflation rate.

(Based on the last set of equations, one can also show that the inflation rate is approximately equal to the nominal GDP growth rate minus the real GDP growth rate.)