Answer Key to the Sample First Midterm

I. Multiple Choice.

1. ANS: D
2. ANS: D
3. ANS: C
4. ANS: A
5. ANS: C
6. ANS: B
7. ANS: B
8. ANS: D
9. ANS: B
10. ANS: A
11. ANS: C
12. ANS: A
13. ANS: C
14. ANS: B
15. ANS: C
16. ANS: D
17. ANS: A
18. ANS: B
19. ANS: B
20. ANS: C

II. Calculations.

21. 1: CPI for the base year 2002=100;
CPI for 2003=(30*5+12*10)/(24*5+8*10)*100=135;
CPI for 2004=(32*5+15*10)/(24*5+8*10)*100=155;

21.2: CPI for 2002=(24*5+8*10)/ (32*5+15*10)*100=64.5
CPI for 2003==(30*5+12*10)/ (32*5+15*10)*100=87
CPI FOR 2004=100

21.3: With 2002 as the base year,
Inflation from 2002 to 2003=(150-100)/100=35%
Inflation from 2003 to 2004=(155-135)/135=14.8%

With 2004 as the base year,
Inflation from 2002 to 2003=(87-64.5)/64.5=35%

Inflation from 2003 to 2004=(100-87)/87=14.9%

They are the same, the slight differences come only from the rounding errors. The short answer to this is that base year matters only as a scale, it will not affect the inflation rate. However, it is easy to show this using a little algebra.

For example, inflation rate from 2003 to 2004 using whichever year as the base year equals

$$\left(\frac{2004\ \text{Price of books} * 5 + 2004\ \text{price of calculators} * 10}{\text{baseyear price of books} * 5 + \text{baseyear price of calculators} * 10} - \frac{2003\ \text{Price of books} * 5 + 2003\ \text{price of calculators} * 10}{\text{baseyear price of books} * 5 + \text{baseyear price of calculators} * 10} \right) /$$

$$\left(\frac{2003\ \text{Price of books} * 5 + 2003\ \text{price of calculators} * 10}{\text{baseyear price of books} * 5 + \text{baseyear price of calculators} * 10} \right) =$$

$$\frac{\left(\begin{array}{l} 2004\ \text{Price of books} * 5 + 2004\ \text{price of calculators} * 10 - \\ 2003\ \text{Price of books} * 5 + 2003\ \text{price of calculators} * 10 \end{array} \right)}{2003\ \text{Price of books} * 5 + 2003\ \text{price of calculators} * 10}$$

Apparently, the base-year prices do not matter since they get cancelled out.

22.

22.1:
2006 nominal GDP: $4*100+$2*180=$760.
2007 nominal GDP: $5*120+$2.5*200=$1100
2008 nominal GDP: $6*150+$3.5*200=$1600

22.2
2006 real GDP: $760.
2007 real GDP: $4*120+$2*200=$880
2008 real GDP: $4*150+$2*200=$1000
Growth of real GDP from 2007 to 2008=($1000-$880)/$880=13.6%

22.3:
2006 real GDP: $5*100+$2.5*180=$950
2007 real GDP: $1100
2008 real GDP: $5*150+$2.5*200=$1250.
Growth of real GDP from 2007 to 2008=(1250-1100)/1100=13.6%

22.4: The growth rates are equal using 2006 or 2007 as the base year. However, this is just a coincidence in this problem. Usually, the growth rate of real GDP comes out different if different base year is used. Real-GDP growth is nothing more than the growth of quantities weighted by the base-year prices. In this problem, it happens to be the case

that 2006 prices and 2007 prices put the same weights on the quantities of sandwiches and magazines so that the growth rate of real GDP comes out as the same.

23:
Public Savings: T- G = 2.7- 3.0 = -0.3
Private Savings: Y- T – C = 8.7-2.7-3.5= 2.5
National Savings: Public Savings + Private Savings = -0.3+2.5= 2.2
Demand for loanable funds comes from Investment = National Savings = $2.2 trillion

24. The argument that poor countries will tend to catch up with rich ones is based on the idea that another unit of capital will increase output more in a country that has little capital than one that has much capital. So, for a given share of GDP devoted to investment, a poor country will grow faster than a rich one.
This argument assumes that other things are the same, but share of GDP invested may be lower in a poor country and the productivity of investment may be less. A politically unstable environment where property rights are unprotected or not secure tends to discourage investment. A country that has limited trade because of legal restrictions or geography cannot focus on producing what it produces best and so has lower productivity. To get the most out of investment, or even simply to use some types of new investment, requires having workers who have acquired some basic human capital.