INV2601 OCT/NOV 2012 MEMORANDUM

	Answer	Calculation
1	**1**	Market value is determined solely by the interaction between supply and demand. Pg 175
2	**2**	Current ratio
3	**1**	$Net\ income = earnings\ before\ tax - tax$ $= 200 - 70$ $= 130$ $ROE = \frac{net\ income}{sharehoders\ equity}$ $= \frac{130}{2104}$ $= 6.18\%$ $ROA = \frac{net\ income}{total\ assets}$ $= \frac{130}{1368}$ $= 9.50\%$
4	**2**	$\in (R_i) = rfr + \beta_i[R_m - rfr]$ $= 6 + 0.9\ (13.5 - 6)$ $= 6 + 6.75$ $= 12.75\%$
5	**3**	

		$V_0 = \frac{D_0\,(1+g)}{r-g}$ $= \frac{0.50\,(1+0.9)}{0.1275-0.09}$ $= \frac{0.5450}{0.375}$ $= R14.53$, overvalued (R14.53 < R16.35)
6	**3**	Unsystematic
7	**1**	The change in the perceived risk of an investment.
8	**2**	$E(R) = \sum_{i=1}^{n} k_i \times p_i$ $E(R_A) = (0.40 \times 23) + (0.30 \times 15) + (0.30 \times 8)$ $= 9.2 + 4.5 + 2.4$ $= 16.10\%$
9	**2**	$\delta^2{}_B = \sum_{i=1}^{n} p_{ki} \times (k_i - \bar{k}_i)^2$ $\delta^2 = 0.4(25-15.25)^2 + 0.3(10-15.25)^2 + 0.3(7.5-15.25)^2$ $= 0.4(9.75)^2 + 0.3(-5.25)^2 + 0.3(-7.75)^2$ $= 0.4(95.0625) + 0.3(27.5625) + 0.3(-7.75)$ $= 38.0250 + 8.2688 + 18.0188$ $= 64.3126$ $\delta = \sqrt{64.3126}$ $= 8.0195$

		$= 8.02\%$
10	**1**	$CV_A = \frac{\delta}{E(R_A)} = \frac{6.26}{16.1} = 0.39$
11	**1**	$NRFR = [(1 + RRFR)(1 + EI) - 1] \times 100$ $= [(1 + 0.0315)(1 + 0.06) - 1] \times 100$ $= [(1.0315)(1.06) - 1] \times 100$ $= [1.0934 - 1] \times 100$ $= 0.0934$ $= 9.34\%$
12	**4**	see table below
13	**3**	A unit trust is allowed to advertise while a hedge fund is not.
14	**1**	Short sales

HP 10BII	
Input	**Function**
-R50	CF_0
R10	CF_1
R12.5	CF_2
R15	CF_3
R28	CF_4
R30.6	CF_5
12%	I/YR
	NPV
	R14.73

<table>
<tr><td>15</td><td>1</td><td>The HPR is a measure of the change in wealth resulting from an investment.</td></tr>
<tr><td>16</td><td>3</td><td>greater, higher</td></tr>
<tr><td>17</td><td>1</td><td>Leading indicators</td></tr>
<tr><td>18</td><td>2</td><td>Opening stage</td></tr>
<tr><td>19</td><td>4</td><td>Prices adjust rapidly to new information.</td></tr>
<tr><td>20</td><td>2</td><td>Macroeconomic prospects, Industry and company analysis.</td></tr>
<tr><td>21</td><td>3</td><td>Sinking fund provision</td></tr>
<tr><td>22</td><td>2</td><td>FV 1 000
PMT 0
N 30 (15×2)
I/YR 4.5% (9÷2)
COMP PV R267</td></tr>
<tr><td>23</td><td>2</td><td>Expectations theory</td></tr>
<tr><td>24</td><td>4</td><td>Duration effect:
$\%\Delta P_D = -D(\Delta y)$
$= -5.90(-2)$
$= 11.80\%$</td></tr>
<tr><td>25</td><td>4</td><td>
<table>
<tr><td></td><td>$\boldsymbol{V_-}$</td><td>$\boldsymbol{V_0}$</td><td>$\boldsymbol{V_+}$</td></tr>
<tr><td>FV</td><td>1000</td><td>1000</td><td>1000</td></tr>
<tr><td>N</td><td>40</td><td>40 (20×2)</td><td>40</td></tr>
<tr><td>I</td><td>(10-1)/2 = 4.5</td><td>10/2 =5</td><td>(10+1)/2 = 5.5</td></tr>
<tr><td>PMT</td><td>35</td><td>(1000 X 0.07)/2 = 35</td><td>35</td></tr>
<tr><td>COMP PV</td><td>815.9842</td><td>742.6137</td><td>679.0775</td></tr>
</table>

$$Convexity = \frac{815.9842 + 679.0775 - (2 \times 742.6137)}{2 \times 742.6137 \times (1/100)^2}$$
$$= \frac{1\,495.0617 - 1\,485.2274}{0.1485}$$
$$= \frac{9.8343}{0.1485}$$
$$= 66.2242$$
</td></tr>
</table>

		NB: 100 basis points = 1%
26	**2**	$F = S(1+r)^t$ $= 50(1.12)^1$ $= R56.00$
27	**4**	The futures price (R60) is greater than the theoretical futures prices (R56). Thus it is a cash and carry arbitrage. Sell futures, buy spot and borrow money.
28	**1**	$S + p = c + X(1+r)^{-t}$ $96 + 3 = c + [100(1.05)^{-0.50}]$ $c = 96 + 3 - [100(1.05)^{-0.50}]$ $= 96 + 3 - 97.59$ $= R1.41$
29	**2**	The option can be exercised on or before its expiration date.
30	**1**	$Break\ even\ for\ the\ put\ holder = X - p$ $= 60 - 3$ $= R57$ $Profit\ for\ the\ call\ holder = S - (X + p)$ $= 80 - (50 + 4)$ $= R26$
31	**4**	Rho
32	**4**	Protective put strategy
33	**3**	Capital preservation

34	**1**	$Standard\ deviation\ of\ a\ portfolio$: $= \sqrt{({\sigma_A}^2 \times {w_A}^2) + ({\sigma_B}^2 \times {w_B}^2) + (2 \times \sigma_A \times \sigma_B \times w_A \times w_B \times r_{A,B})}$ $= \sqrt{(0.05^2 \times 0.6^2) + (0.10^2 \times 0.4^2) + (2 \times 0.05 \times 0.10 \times 0.6 \times 0.4 \times -0.80)}$ $= \sqrt{0.0009 + 0.0016 - 0.0019}$ $= \sqrt{0.0006}$ $= 0.0241 \times 100$ $= 2.41\%$
35	**4**	$Optimal\ weight_A = \frac{Factor\ (A)}{[1 + Factor\ (A)]}$ $= \frac{2}{[1+2]}$ $= 0.6667$ $= 66.67\%$
36	**3**	$Correlation_{M.N} = \frac{Covariance_{M,N}}{\sigma_M \times \sigma_N}$ $= \frac{0.78}{0.56 \times 0.94}$ $= 1.48$
37	**1**	Buy and hold
38	**3**	$Sharpe_{\ FUND\ ALPHA} = \frac{12-8}{5} = 0.80$ $Sharpe_{\ FUND\ BETA} = \frac{14-8}{15} = 0.40$ $Sharpe_{\ FUND\ SIGMA} = \frac{17-8}{10} = 0.90$ Fund sigma has the highest sharpe ratio.
39	**3**	$\alpha_{FUND\ ALPHA} = r_p - [r_f + \beta(r_m - r_f)]$ $= 12 - [8 + 0.8(12-8)]$ $= 0.80\%$
40	**1**	Portfolio X since it has the highest Sharpe measure compared to Portfolio Y and the market index.