Q I. (4 points) (please answer only one of the two questions):

1. What is a cross-currency swap (no needs for any diagram, if you prefer you can describe it in words w/ example)?

   Cross-currency swap is a technique to hedge against the currency exposure of operating cash flows. It basically consists in offsetting an operating cash flow in a foreign currency by incurring a debt obligation in the local currency and then swapping it with a similar maturity & value foreign currency denominated debt obligation. An advantage of this method is that, unlike the back-to-back loan, it does not appear on the company’s balance sheet.

2. What is a back-to-back (or parallel) loan (no needs for any diagram, if you prefer you can describe it in words w/ example)?

   A back-to-back (or parallel) loan is an arrangement where two business firms in separate countries arrange to borrow each other’s currency for a specific time period through their subsidiaries in the other firm’s country. At an agreed terminal date they return the borrowed currencies. The operation is conducted outside of the foreign exchange markets.

   So, for example a Hong Kong parent company can extend a loan to its US subsidiary by finding a US parent company that wants to extend a loan to its Hong Kong subsidiary, and then swap the two loans.
Q II. (4 points) (please answer only one of the two questions):

1. Briefly define each of the following management techniques for reducing the firm’s operating cash flows: 
   cash flow matching and 
   risk-sharing clauses.

   **Cash flow matching (2 points)**

   Cash flow matching is the practice of hedging operating currency exposure of 
   forex-denominated operating cash inflows by creating forex-denominated financial 
   cash outflows. For example if a Dutch firm is selling on a continuing basis its merchandise to 
   a Japanese firm, they might wish to create a matching cash outflow in the same currency 
   in which inflows are (Japanese yen) by borrowing in Japanese yen, converting the 
   proceeds today in EUR, and then using the Yen inflows to pay the Yen debt service.

   **Risk-sharing clauses (2 points)**

   Risk-sharing clauses is a practice of eliminating currency exposure between firms with 
   continuing business (e.g. buyer-supplier) relationship. It is a contractual arrangement 
   between the buyer and seller where they agree to split the currency movement impacts on 
   payments between them. For example, if Deutsche Telecom AG has a continuing business 
   relationship w/ Ericsson of Sweden, they might fix the bands of the EUR/ Swedish Krona 
   exchange rate that will apply on payments between them, to say between SK 8.9/EUR and 
   SK 9.1/EUR. So, whenever the exchange rate falls out of these bands the two parties will 
   share the currency movement impact on payments between them.

2. Black & Decker (US) exports blenders to France. Annual sales are 1,000,000 blenders, 
   at US$100 each. EUR exchange rate is currently EUR1/$, but is expected to change to 
   EUR 1.10/$. Black & Decker faces a pricing decision: (1) maintain same initial EUR price 
   after EUR depreciation, and so get fewer US$ (French unit volume sales will not 
   change in that case), or (2) maintain same US$ price (i.e. raise EUR price), & experience 
   20% drop in unit volume sales. The direct cost per unit is 60% of the initial US$ sales 
   price. What is the $ gross profit in cases (1) & (2)?

   **Case 1. Maintain same EUR price = US$100 * EUR 1/$ =EUR 100.**
   So, effective post-EUR-depreciation $ price is (EUR 100) / (EUR1.10/$) = $90.91
   The $ gross profit is: ($90.91 - $ 60)*1,000,000 = $30,909,000.

   **Case 2. Maintain same $ price = US$100, so EUR price $100 * EUR 1.10/$ =EUR 110.**
   The $ gross profit is: ($100 - $ 60)*800,000 = $32,000,000.

   Notice the drop in the sales w/ 20% in the second case. Clearly the company is better off 
   not passing through the exchange rate fluctuation to the price.
Q III. (4 points) (please answer only one of the two questions)

1. Under the U.S. translation procedures, if financial statements of the foreign subsidiary of a U.S. parent are maintained in local currency, and the local currency is the functional currency, which method (current rate vs. temporal) would the subsidiary use to translate its financial statements to consolidate them with the US parent? Which method would be used if the subsidiary’s functional currency is US$?

*If financial statements of the foreign subsidiary of a U.S. parent are maintained in local currency, and the local currency is the functional currency, the current rate would be used to translate subs' financial statements. (2 points)*

*If financial statements of the foreign subsidiary of a U.S. parent are maintained in local currency, and the US$ is the functional currency, the temporal method would be used to re-measure subs’ financial statements to consolidate them with the US parent. (2 points)*

2. Briefly, what is a balance sheet hedge and how would you perform it if it’s expected that the foreign currency in which subsidiary’s balance sheet is recorded, will depreciate? Give me two occasions on which using the balance sheet hedge would be justified.

*Balance sheet hedge is a technique to lower the net exposed assets when consolidating a subsidiary’s balance sheet items into parent’s one. It requires an equal amount of exposed foreign currency assets and liabilities on a firm’s consolidated balance sheet. It can be achieved in two ways: 1) reduce the exposed assets in the foreign currency without reducing at the same time the exposed liabilities in the foreign currency; 2) increase the exposed liabilities in the foreign currency without increasing the exposed assets.*

*Any two occasions of the following would justified a balance sheet hedge:*
  * Subsidiary is to be liquidated.
  * Firm has debt covenants to keep with.
  * Subsidiary is operating in hyperinflationary country.*
Q IV. (4 points) (please answer only one of the two questions):

2. If the British subsidiary of a European parent firm has exposed assets of £1,250,000 and exposed liabilities of £950,000, what are the net exposed assets? The current exchange rate is €1.6/£. If the pound is expected to increase in value to €1.7/£, what would be the translation gain (or loss) of the European parent firm? If the pound is expected to decrease in value to €1.5/£, what would be the translation gain (or loss) of the European parent firm?

The net exposed assets = exposed asset – exposed liabilities = £1,250,000 - £950,000 = £300,000. (2 points)

At the current rate, the exposure is £300,000*EUR1.6/£ = EUR 480,000. If the pound is to appreciate to EUR1.7/£, then there is a translation gain:

£300,000*(EUR1.7/£ - EUR1.6/£) = EUR 30,000. (1 point)

If the pound is to depreciate to EUR1.5/£, then there is a translation loss:

£300,000*(EUR1.5/£ - EUR1.6/£) = (EUR 30,000). (1 point)

2. The German subsidiary of Ford Motor Company (US) has its balance sheet for Jan. 1 shown below. The Jan. 1st 2003 exchange rate is $1.1/EUR. Net Plant & Equipment and inventory were acquired at exchange rate of $1/EUR on March 30th 2001.

<table>
<thead>
<tr>
<th>Balance Sheet, 01/01/2003, million EUR</th>
<th>Functional Currency: EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td><strong>Liabilities &amp; Net Worth</strong></td>
</tr>
<tr>
<td>Cash</td>
<td>EUR 100</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>EUR 50</td>
</tr>
<tr>
<td>Inventory</td>
<td>EUR 50</td>
</tr>
<tr>
<td>Net Plant &amp; Equipment</td>
<td>EUR 500</td>
</tr>
<tr>
<td></td>
<td><strong>EUR 700</strong></td>
</tr>
<tr>
<td><strong>Liabilities &amp; Net Worth</strong></td>
<td><strong>EUR 700</strong></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>EUR 100</td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>EUR 300</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>EUR 400</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>EUR (100)</td>
</tr>
</tbody>
</table>

a. What is the US$ value of net exposed assets of Ford Germany on January 1, using the current rate method?

b. If you were to use temporal method, at what exchange rate would you re-measure the line item “Net Plant & Equipment?”

a. (2 points)

Under the current rate method, know that total exposed assets are sum of all asset line items in the balance sheet above. However, exposed liabilities are sum of current liabilities and long-term debt only. So, the total exposed assets are EUR 700 million, while the total exposed liabilities are EUR 400 million (i.e. the total liabilities net of the capital stock and retained earnings). The difference is EUR 300 million, which at the rate of Jan 1st is EUR 300,000,000 * $1.1/EUR = $330,000,000.

b. (2 points)

Under the temporal method, the line item “Net Plant & Equipment” (a non-monetary asset) shall be re-measured using the historical exchange rate.
Q V. (4 points) (please answer only one of the two questions):

1. Volkswagen AG has a beta of 0.7. The company’s cost of debt is 8%, risk-free rate is 3%, & expected return on market portfolio is 11%. Income taxes are 45%, and company’s target financial mix is 60% debt, 40% equity (note the high leverage). What is Volkswagen’s weighted average cost of capital, using the CAPM?

Know that the after-tax cost of debt is 8%*(1-0.45)=4.4%. Need to find out the cost of the equity. To find it out, use CAPM. Know that $k_e = k_{rf} + \beta(k_m - k_{rf})$, where $k_e$ = expected return on equity = cost of equity, $k_{rf}$ = risk free rate on bonds = 3%, $k_m$ = expected rate of return on the market = 11%, $\beta$ = coefficient of firm’s systematic risk = 0.7. So, the cost of equity is equal to $3% + 0.7*(11%-3%) = 8.6%$.

Then, the WACC=$0.4*8.6% + 0.6*4.4% = 6.08%$.

2. Briefly, how would you compute the cost of equity using the integrated-segmented CAPM. How would you compute it using the world CAPM?

World CAPM (1 point)
The cost of equity is determined as the US risk free rate plus the world risk premium times the estimate of the world beta (i.e. a beta computed from a CAPM on the world portfolio, such as the MSCI).

Integrated-segmented CAPM (3 points)
First we compute the world cost of capital using a CAPM setup: the world cost of capital is equal to the US risk free rate plus the world risk premium times the estimate of the world beta (notice that this is a world beta, i.e. a beta computed from a CAPM on the world portfolio, such as the ones of MSCI).

Then we compute the local cost of capital using a CAPM setup: the local cost of capital is equal to the local risk free rate plus the local risk premium times the estimate of the local beta (notice that this is a local beta, i.e. a beta computed from a CAPM on the local market portfolio, usually a portfolio representing 90+ % of the local stock market capitalization).

Finally we average the world and local cost of capital. What weights to use? If the country is only partially integrated with the rest of the world, it will be better if we give more percentage weight on the local cost of capital. Vice versa, if the country is highly integrated in the world economy, then we have to give more weight on the world cost of capital. So, we can use the ratio of the country’s size of international trade (can get it from the BOP stats) to the total GDP (gross domestic product) as a weight on the world cost of capital.