a- If a country has a current account deficit is its financial account in surplus or deficit? Why?
A current account deficit requires a financial account surplus (neglecting the capital account, very small in practice). The fundamental Balance of Payments identity indeed requires that: Current account + Capital account + Financial account = 0. A country with CA +KA <0 has to sell (export) assets abroad to finance its current account deficit and this means a financial account in surplus and a NFA that deteriorates.

b- What is Purchasing Power Parity?
\[ P_€ = E \cdot P_\$ \] where \( P_€ \) and \( P_\$ \) are price indices of US and euro zone or \( E = \frac{P_€}{P_\$} \): which is the absolute version of PPP. An increase in the general level of prices reduces purchasing power of domestic currency and leads to a depreciation. This also implies that the price levels of different countries are equalized when measured in the same currency. Relative PPP says that the change in the exchange rate is equal to the inflation differential between two countries: \( \frac{E_t - E_{t-1}}{E_t} \approx \pi_€ - \pi_\$ \)

c- Why can a large country have an incentive to impose a tariff?
The reason is that a tariff that reduces imports also reduces demand at the world level in the case of a large country. This in turn reduces the price of the good which is imported and therefore improves the terms of trade of the large country. A tariff on imports of a large country can have a net positive welfare effect if the terms of trade effect more than compensates the efficiency losses (production and consumption). In this case, the tariff revenues plus the producer surplus gains would be larger than the consumer surplus loss.

d- How do a tariff, a quota and a non-tariff barrier differ?
A tariff is a tax on the value (ad-valorem) or units (specific) of the imported good. A quota is a restriction on the quantity imported. A non-tariff barrier is typically a regulation or a rule that increases the cost of imports relative to domestic production (Technical barriers to trade such as certification procedures; Sanitary and phytosanitary measures (SPS) such as GMOs). In all cases, consumer prices increase and only in the tariff case, revenues are collected.

e- Explain the interest parity condition
The interest parity condition (for €/$) is an arbitrage condition which requires that investors get the same expected return whether they invest in € denominated bonds or $ denominated bonds. With perfect capital mobility it defines a condition for equilibrium on the foreign exchange market. It says: \[ r_€ = r_\$ + \frac{(E^e - E)}{E} \] which says that the interest rate on € denominated bonds \( r_€ \) equals the interest rate on $ denominated bonds \( r_\$ \) and the expected change in the exchange rate \( \frac{E^e - E}{E} \).

**PART 2 EXERCISES (8 points)**

A. (3 points) In a press conference in March 2017, Mario Draghi (president of the Governing Council of the ECB) declared “Until the Governing Council sees a sustained adjustment in inflation, net asset purchases will continue at a monthly pace of €60 billion, until December 2017 or beyond if necessary”. Explain in detail the mechanism through which this statement affects the exchange rate of the euro in a situation of zero interest rates. This statement aimed at changing expectations on future monetary policy developments (this is called forward guidance) pointing to sustained monetary easing and asset purchases. The statement can be interpreted as promising monetary easing as long as inflation does not increase back to a higher level. In turn, this also should have moved expectations on future inflation by increasing expected inflation rate and therefore (through for example a mechanism of PPP) increasing expected depreciation of the exchange rate. The impact on the exchange rate is immediate as an expectation of a depreciated euro increases the expected return on $ denominated assets. The effect is shown on the graph below (the vertical € asset return is at zero interest rate) with the shift upward of the expected return on $ denominated assets that requires an immediate depreciation of the euro (from \( E_1 \) to \( E_2 \)) as investors sell euros to buy dollars:
B. (5 points) The following graph (Figure 1) shows the change in output (in %) in selected euro economies when a country (France, Germany or US) increases its government spending by 1% of GDP.

a. Explain, using AA-DD graphs the impact of such a policy on Ireland - whose trade (exports + imports) to GDP ratio is around 100% - and Greece - whose trade to GDP ratio is around 35%.

b. Explain why a fiscal expansion has a different impact on these two countries if it comes from the US or from a Eurozone country (Germany or France).

Figure 1: Output response to a foreign fiscal expansion in Ireland, Greece and Portugal.
Note: The order of the columns for the origin of the shock (from left to right) is Germany, France and the US for each selected euro economies. A foreign spending shock is a 1% of GDP increase of government spending in a given large foreign country. The output response is measured 2 years after the initial shock in the large foreign economy.
Source: Ivanova and Weber, IMF, 2011

The increase in US government spending has two main effects when: because it raises disposable income in the US, it raises US imports which will increase demand for Irish and Greek goods. This is a shift up in the DD curve. The shift is larger for a more open economy such as Ireland (which also is closely linked with the US). The second effect is that the increase in US government spending increases the US interest rate and therefore the expected return on $ denominated assets. This in turn generates an appreciation of the $. This translates into a shift upward of the AA curve. This also raises exports from Ireland and Greece to the US. The example below is one that corresponds more to the Irish case than the (more closed economy) case of Greece. In the Greek case the DD curve would be more vertical so that the euro depreciation would not benefit much to the Greek economy that export little to the US. The graph below shows that the US expansion benefits both countries through a direct channel (US demand rises, exports to US increase) and an exchange rate channel ($ appreciates and € produced goods replace US produced goods). The graph for Greece would qualitatively similar but with a smaller shift of the DD curve which itself would be more vertical so that at the end the output effect would be smaller.
A fiscal expansion from another Eurozone country (Germany or France) is a bit different. In this case, the nominal exchange rate between say Germany and Ireland or Greece cannot change so at least in the short run (when prices are rigid) the only positive impact is one through which the DD curve shifts right.

PART 3: ESSAY (7 points)

In March 2017, Iceland – for which trade (exports + imports) as a % of GDP is around 90% - has lifted its remaining controls on capital movements and has experienced high volatility of its currency the krona. Iceland is now thinking of its exchange rate regime. Central bank Governor Mar Gudmundsson has said in the past that he would prefer for Iceland to not go back to a fully free-floating currency while Finance Minister Bjarni Benediktsson has highlighted the value of having a free-floating exchange rate as a shock absorber. What are the relevant trade-offs that such a country should take into account to make this choice? What might you advise?

Sketch of argument:
Introduction: The choice of an exchange rate regime is one the key policy decision for a small open economy such as Iceland that is very dependent on the rest of the world. The academic debates on the best choice are old but have been recently renewed.

1) The standard trade-offs between fixed and flexible exchange rate regimes are key for a small open economy
   a. The Mundell trilemma informs on the stark choice for Ireland as it decides to remove its remaining capital movement controls. Explain the trilemma to show that if Iceland decides to fix it will have to abandon its monetary policy sovereignty.
   b. Explain why a flexible exchange rate can act as shock absorber (AA-DD graph comparing the fixed and flexible exchange rate) when the economy is hit by demand shocks

2) The financial dimension has become a key issue in choosing between fixed and flexible exchange rate
a. Fixed exchange regimes are financially vulnerable. If the fixed exchange rate looses credibility, speculators may sell massively the currency and deplete the foreign reserves of the central bank (Krugman model). This may also oblige the central bank to raise its interest rate (explain why, see course) which can plunge the country into a recession (see Russia 2015 for example). Self-fulfilling expectations may also generate a crisis because of balance sheet effects (very present in Iceland indeed). Explain slide 28 of course on the subject.

b. The trilemma may not mean that a country with a flexible exchange rate but which debts are denominated in foreign currency can have monetary sovereignty. Explain the recent debate on dilemma/trilemma.

Conclusion: Monetary sovereignty in a small open economy may not be full even with perfect capital mobility. This may be an argument for not removing all capital controls in some countries when moving towards flexible exchange rates. The exposition of trade-offs for Iceland may also suggest that a corner solution (fixed or flexible) may not be best and may point to a “dirty floating” choice which indeed is the most common case in the world.