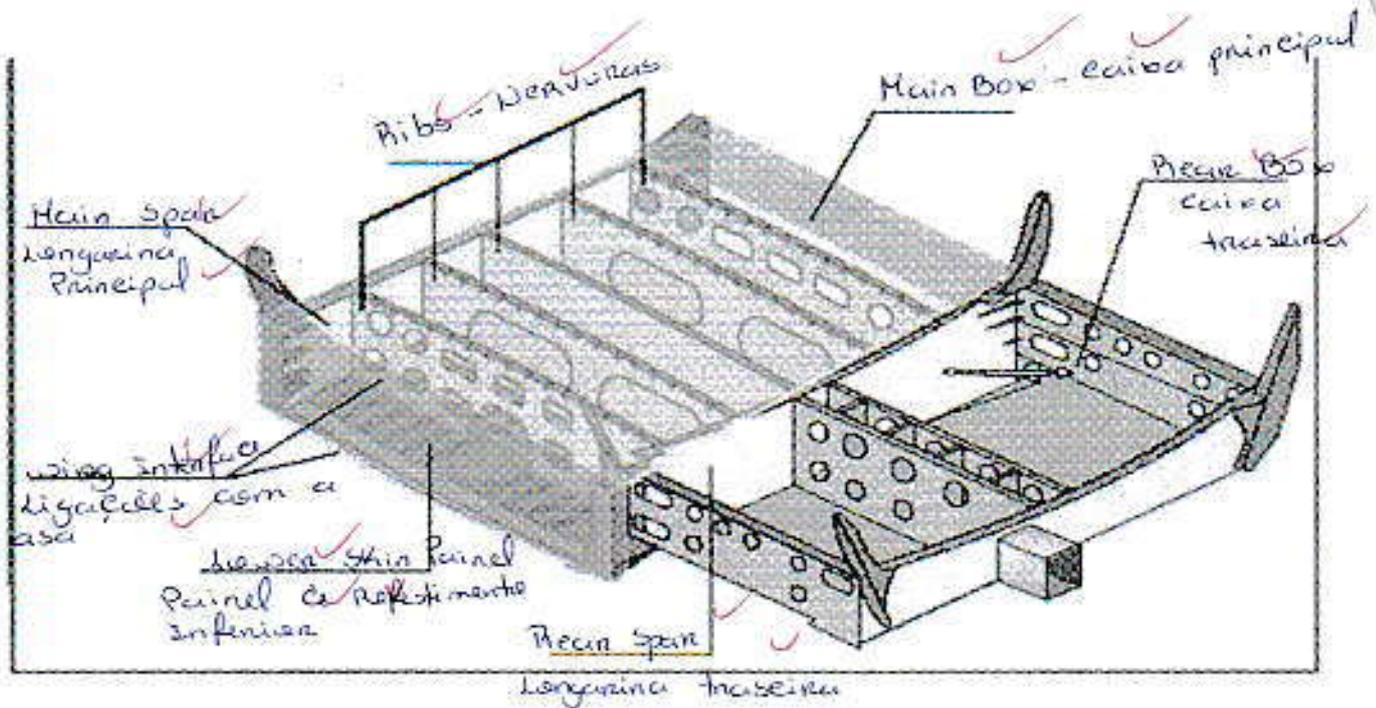
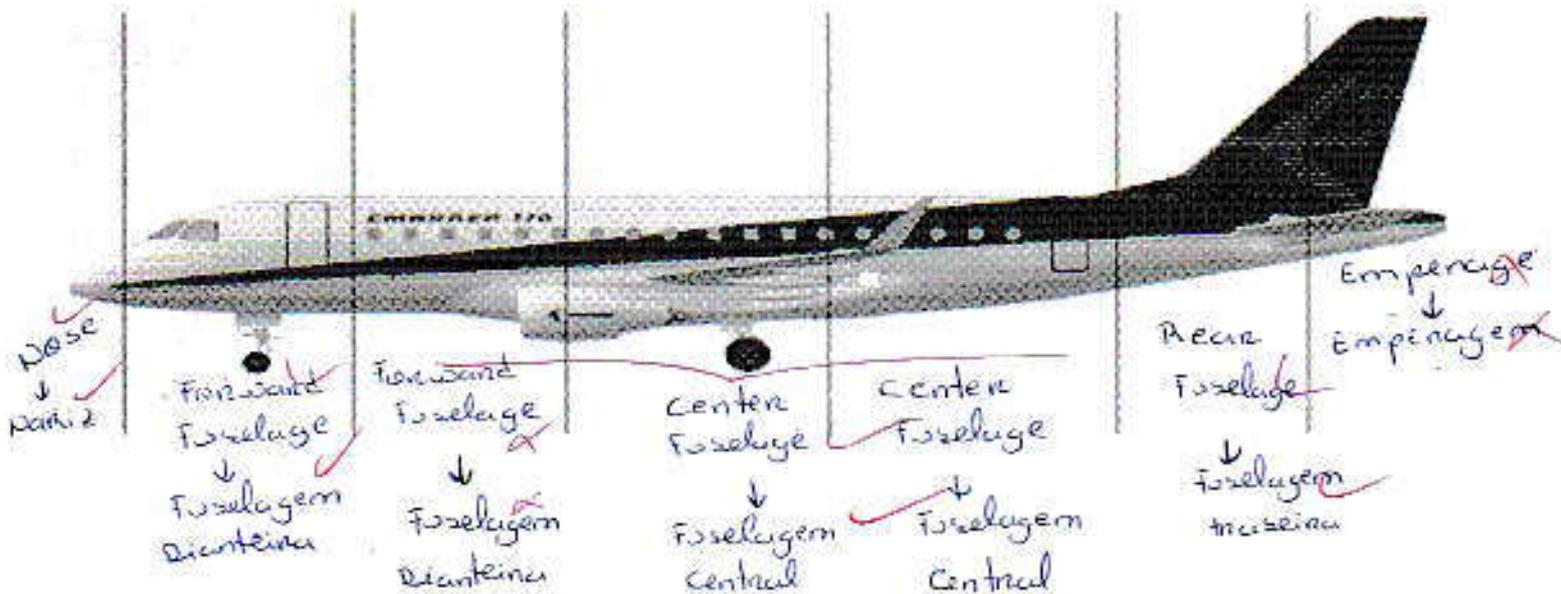


- 3- a) Label, in English, the parts in the image below (7 val.)
 b) Translate into Portuguese. (7 val.)



- 4 a) Write the names in the corresponding part. (5 val.)
 b) Translate into Portuguese. (5 val.)



5- Translate the following text: (30 val.)

The Wings are the main aerodynamic structure of an airplane. They create lifting forces to sustain the airplane when flying.
The wings can also storage fuel and place components as landing gear, engine and flight control surfaces. The Wing main structure is made from aluminum alloy, and includes Spars, Ribs, Leading Edge and Trailing Edge.

The Winglets are structural parts installed at wing tips, to prevent the creation of vortex.

The wings of an aircraft have many structural interfaces:

The Wing Stub is a structural box at Center Fuselage, where the wing is installed at the aircraft.

The Stub can be divided in two parts:

- > The Main Box provides Wing-to-Fuselage interface, and can storage extra fuel.
- > The Rear Box is the Main Landing Gear Compartment.

Wing to Fuselage Fairings (WFF) consist in many composite panels, which give a better aerodynamic shape to the wing-to-fuselage junction. They round wings corners and close the gaps. They also protect the systems and components attached to the wing stub-fuselage lower region.

As asas são as principais estruturas aerodinâmicas de um avião. Elas são feitas de alumínio para sustentar o avião em vôo. As asas podem também conter combustível e componentes para o trem de aterragem, motor e dispositivos de controle de vôo. A principal estrutura da asa é feita em liga de alumínio, e inclui longarinas, nervuras, Bordo de Ataque e Bordo de fuga.

As Alas da ponta da asa são partes estruturais instaladas na ponta da asa e previnem a criação de vórtices.

As asas do avião têm várias disposições estruturais: a caixa da asa é a caixa estrutural da fuselagem central, e é instalada na asa do avião. O avião pode ser dividido em duas partes: a caixa principal fornece um dispositivo asa-fuselagem e pode conter combustível extra.

A caixa traseira é o compartimento principal do trem de aterragem. WFF consiste em várias painéis de compostos que dão um melhor formato aerodinâmico à junção asa-fuselagem. Elas podem proteger os sistemas e componentes da região inferior da caixa da asa-fuselagem.

6- Answer the following questions (short answers): (4 val)

a) Why are wings so important in an aircraft?

The wings are important in an aircraft because they create lifting forces to sustain the airplane when flying.

b) What's the function of the winglets?

The function of the winglets is to prevent the creation of vortices.

c) Define "wing stub".

The wing stub is a structural box at Center Fuselage, where the wing is installed at the aircraft.

d) Why do we use the wing to fuselage fairings in an aircraft?

The WFF protect the systems and components attached to the wing stub-fuselage lower region.