

**AIRFRAME SYSTEMS I (A&E Y2 – MODULE II)**

1. a) With aid of a labelled sketch explain the functions of a basic hydraulic system.  

(12 marks)
- b) Outline FOUR causes of hydraulic fluid variations in hydraulic reservoir.  

(8 marks)
2. a) Describe the following hydraulic pumps : -
  - (i) Constant Delivery (Fixed Volume) pump,
  - (ii) Constant Pressure (Variable Volume )

(10marks)
- b) Explain the function of the following types of hydraulic valves : -
  - (i) Pressure control valve
  - (ii) Flow control valve

(4marks)
- c) Outline any SIX properties of hydraulic fluid  

(6 marks)
3. a) Outline SIX advantages of using compressed air over hydraulic or electrical systems. (6 marks)
- b) State any FOUR sources of air used in pneumatic system. ( 4 marks)
- c) With aid of sketches describe the following pneumatic system components: -
  - (i) Relief valve
  - (ii) Check valve
  - (iii) Orifice restrictor
  - (iv) Variable restrictor
  - (v) Pressure reducing valve

(10 marks)
4. a) Describe the types of aircraft landing gear .  

( 9 marks)
- b) Outline FIVE components used in the construction of an aircraft landing gear.  

(5 marks)

5. a) Outline FOUR functions of a landing gear.

(4 marks)

(b) Describe THREE methods used in absorbing shock in a fixed landing gear.

(6marks)

(c) With aid of a labelled sketch describe the construction of an aircraft nose landing gear oleo – strut.

6. (a) (i) Differentiate between Loose flange type and Detachable flange type of an aircraft wheel.

(ii) Describe a divided type wheel of an aircraft.

(8marks)

(b) (i) Describe the term " Tyre Creep".

(ii) Explain THREE methods of counteracting aircraft tyre creep.

7. (a) Outline tyre markings and explain the meaning of each.

(12marks)

(b) Describe any FOUR defects which normally affects an aircraft tyre.

(8marks)

8. (a) Outline SIX functions of an aircraft tyre.

(6marks)

(b) With aid of a labelled sketch describe the construction of an aircraft tyre cover.

(14marks)