

AIRFRAME TECHNOLOGY. (A&E Y3)

1. (a) Give FIVE advantages of a spoiler compared to the aileron.

(10 marks)

(b) Explain the meaning of the term 'adverse yaw'.

(4 marks)

(c) Discuss THREE main methods adopted to reduce the effect of the adverse yaw.

(6 marks)

2. (a) Outline any TEN requirements of hydraulic fluid.

(10 marks)

(b) Explain TWO main types of low-pressure pumps used in aircraft hydraulic systems.

(8 marks)

(c) Explain the reason as to why different types of hydraulic fluids cannot be mixed.

(2 marks)

3. (a) Define the term "aircraft rigging"

(4 marks)

(b) State SIX reasons as to why rigging is carried out

(6 marks)

(c) (i) State TWO functions of rigging instruments.

(ii) Give any THREE safety precautions to be observed before using rigging instruments.

(10 marks)

4. (a) With aid labelled sketches, describe FOUR types of aircraft flaps.

(8 marks)

- (b) Discuss how 'vortices' develop on the aircraft wing tip. **(4 marks)**
- (c) Explain any FOUR types of aircraft tabs, illustrate your answers. **(8 marks)**
5. (a) Discuss the operation of the discharge valve of a transport aircraft cabin pressurisation. **(6 marks)**
- (b) Outline what is involved in the following aircraft environmental systems:-
(i) Cabin air conditioning
(ii) Cabin pressurisation **(10 marks)**
- (c) Discuss the defect that often occurs on the cold air unit and how it is rectified. **(4 marks)**
6. (a) With aid of a labelled sketch discuss the continuous flow passenger supplementary Oxygen System. **(16 marks)**
- (b) Explain how pilot will get 100% oxygen in case there is fumes in the cockpit **(4 marks)**
7. (a) With aid of labelled sketches describe the THREE types of aircraft wheels. **(9 marks)**
- (b) Describe THREE methods of shock absorbing designs of aircraft landing gear. **(6 marks)**
- (c) Discuss the term 'Air/ground Logic' in a landing gear system **(5 marks)**
8. (a) Describe FOUR methods of fire detection system.

(12 marks)

(b) (i) State TWO physical indications that will show an engine fire extinguisher bottle has been fired.

(ii) Give TWO physical indications that will prove an engine fire extinguisher has discharged overboard.

(8 marks)