

FLIGHT MECHANICS YEAR 2 TEP

1. a) With the aid of diagrams, explain shock wave formation on an aircraft wing as it flies to a maximum speed of mach 1.5. (10marks)
- b) State two methods employed by aircraft manufacture to increase the critical mach number (2marks)
- c) State eight differences between air flow at subsonic and supersonic speeds. (8marks)
2. State and explain five effects of shock wave formation on an aircraft wing. (20marks)
3. Explain the following terms as applied on aircraft control.
 - i) Dutch roll (10marks)
 - ii) Phugoid (10marks)
4. An aircraft with a mass of 5500kg is flying straight and level at its maximum speed. The thrust line is horizontal and 0.3 meters above the drag line which passes through the center of gravity. The drag is 100KN and the center of pressure is 0.6 meters behind the center of gravity. Find the load on the tail plane which is 5.5 meters behind the center of gravity. (10marks)