

Code: 9A21601

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2017

FLIGHT MECHANICS – II

(Aeronautical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 What is the need for stability in airplanes? Differentiate between static and dynamic stability.
- 2 What are equations of motion? Derive the expression for the longitudinal equations of motion.
- 3 (a) Derive the expression for the derivative due to rolling rate.
(b) Derive the expression for the derivative due to yawing rate.
- 4 Derive the expression for the elevator power required to trim the aircraft in a steady coordinated turn.
- 5 Write short notes on:
 - (a) Aerodynamic balancing of control surfaces.
 - (b) Control free neutral point.
- 6 (a) What is maneuver stability?
(b) Differentiate between control fixed and control free maneuver stability.
- 7 (a) What is cross-coupling?
(b) Explain how roll accompanies yaw and yaw accompanies roll.
- 8 Explain the procedure for the solution of the stability quartic.
