

Code: 9A21604

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

FLIGHT VEHICLE DESIGN

(Aeronautical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 In the context of a conceptual design, what is meant by comparable aircraft? How are they useful to you?
- 2 Write short notes on:
 - (a) Empty – weight estimation.
 - (b) Fuel – Fraction estimation.
- 3 Derive an expression for thrust to weight ratio of an aircraft in steady level flight in terms of lift-drag ratio (L/D), wing loading (W/S), drag due to lift (K) and other parameters.
- 4
 - (a) Define fineness ratio.
 - (b) While designing the fuselage of a passenger aircraft, what are the factors to be considered?
- 5 Write short notes on:
 - (a) Conic lofting.
 - (b) Flat – wrap fuselage lofting.
- 6 Derive the expressions for range and endurance for a jet aircraft.
- 7 Explain different types of loads that act on aircraft.
- 8 What are the fundamental problems and technology available in the context of aircraft design?
