

Code: AE2T5

I B.Tech - II Semester – Regular Examinations – April 2016

**INTRODUCTION TO AERONAUTICAL ENGINEERING
(AERONAUTICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Classify the types of lighter-than-air aircrafts.
- b) What is use of flap?
- c) What is a tropopause?
- d) Write the nomenclature of NACA 23012.
- e) What is the difference between monocoque and semi-monocoque structure?
- f) Give the expression for drag polar of the airplane.
- g) What are the different types of stability?
- h) Under what conditions, you can say the aircraft is trimmed?
- i) Define tail lift coefficient.
- j) Define mach number.
- k) Write the applications of Turbojet engines.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. Explain in detail, about different types of flight vehicles along with their relative advantages. 16 M
3. How does a Turbofan work? What are the advantages of having multiple spools in a turbofan engine? 16 M
4. What are the different sources of aerodynamic drag? Explain in detail, about the each type of drag. 16 M
5. Derive the expression for Range and Endurance of a Jet Airplane. 16 M
6. Illustrate the static stability of an airplane for the following cases: 16 M
 - i) Equilibrium position(trimmed)
 - ii) Pitched upward by disturbance
 - iii) Pitched downward by disturbance