



Reg. No. : .....

Name : .....

**Second Semester M.Tech. Degree Examination, April 2018**  
**(2013 Scheme)**  
**EGE 2001 – FLIGHT DYNAMICS AND CONTROL**

Time : 3 Hours

Max. Marks : 60

**Instruction : Answer any two full questions from each Module.**

**MODULE – 1**

1. Develop the equation of motion of an aircraft in level unaccelerated flight, with necessary force diagrams. State the assumptions made. 10
2. Derive the relationship between power available with flight speed for an aircraft. What is the effect of altitude on their performance ? 10
3. The following data refers to a typical transport aircraft. Weight is 42000 N, wing area 28 sq.m., Oswald efficiency factor 0.9, zero lift drag coefficient is 0.03. What is the thrust required by the craft to fly with a velocity of 300 km/h at an altitude of 4 km ? 10

**MODULE – 2**

4. a) Define range and endurance. State the conditions for maximum range and endurance. 5  
b) What are the parameters considered to define the turning performance of an aircraft ? 5
5. Draw the V-n diagram and explain its significance. 10
6. The maximum lift to drag ratio of an aircraft is 10. The flight starts a power off glide at an altitude of 3 km. Calculate the minimum glide angle and maximum range measured along the ground that the aircraft can cover and also compute the glide velocity. 10

**MODULE – 3**

7. Define static stability of an aircraft. State and explain the conditions for longitudinal static stability of an aircraft. 10
  8. What are the characteristic modes of longitudinal, lateral and directional motion of an airplane ? 10
  9. a) Explain flight path stabilization. 5  
b) Explain the working of instrument landing system. 5
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