SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2016

(2013 SCHEME)

13.705 FLIGHT DYNAMICS (U)

Time: 3 Hours   Max.Marks:100

N.B: Answer all questions from PART- A and any one question from each module in PART-B.

PART – A

1. **Define skin friction drag and pressure drag**

2. **What is the significance of drag divergence mach number**

3. **Explain Range and endurance**

4. **What are the limitations of pull up and push up diagrams**

5. **What is Aerodynamic balancing**

6. **What are the stability criterion**

7. **Explain briefly about dutch roll**

8. **What is weather cocking effect**

9. **What is hinge moment coefficient**

10. **What are the basic forces acting on a Flight vehicle**   **(2*10)**

PART-B

MODULE -1

11. **a) Derive the condition for minimum drag and power required in straight and level flight**   **(10)**

    b) Explain briefly the different types of drag associated with an airplane   **(10)**

OR

12. **Derive the forces and moments acting on a Flight vehicle**   **(20)**

MODULE-2

13. a) Explain performance of aircraft in level flight   **(10)**

    b) Explain turning performance   **(10)**

OR

14. Explain with sketches pull up and push up manoeuvers of Flight   **(20)**

MODULE-3

15. a) What is the criterion for static and longitudinal stability   **(10)**

    b) Define Neutral point   **(10)**

OR

16. a) Explain about inherently stable and marginal stable airplane   **(15)**

    b) Explain hinge moment coefficient   **(5)**

MODULE -4

17. Write a short note on

    a) Autorotation

    b) spin

    c) Dutch roll   **(20)**

OR

18. a) Explain briefly lateral and directional stability   **(10)**

b) Explain coupling between Rolling and Yawning moment **(10)**