R09

Code No: C7606

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
AERODYNAMICS OF FLIGHT VEHICLES
(AEROSPACE ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

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1. Discuss the properties of symmetric and cambered airfoils. Compare the circulation distribution and aerodynamic characteristics of symmetric and cambered airfoils. [12]

2. Prove that elliptic distribution of lift over a finite wing yields minimum induced drag. [12]

3. Compare the subsonic and supersonic airfoils and their aerodynamic characteristics. [12]

4. Discuss Prandtl – Glauert – Goethert transformation. [12]

5. a) Derive Crocco's relation $\frac{\partial S}{\partial y} = \frac{u}{T}$ and $V = \frac{u}{T}\omega$

   b) Discuss the solution of energy equation for Prandtl number unity. [12]

6. Briefly discuss:
   a) Compressibility, turbulence and noise and Centrifugal instability.
   b) Flow around spheres and circular cylinders. [12]

7. Discuss fully developed flows in tubes and channels. [12]

8. Discuss airfoil design for maximum lift coefficient. [12]

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