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BASE-003

B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

00328

June, 2016

BASE-003 : HIGH SPEED AERODYNAMICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks.*

1. Explain the shock expansion technique for curved surfaces with a neat sketch. *10*

2. Explain the design considerations for supersonic aircrafts in detail. *10*

3. Derive the coefficient of pressure for hypersonic Prandtl-Meyer flow in terms of hypersonic similarity parameter. *10*

4. Derive the coefficient of pressure for a plate submerged in uniform flow at an angle α by using Newtonian flow theory. *10*

5. Explain the significance of angle of attack in subsonic compressible flow. *10*

6. Discuss small perturbation potential theory. *10*

7. Explain the conical flow method treatment for swept back wings. *10*

8. Discuss flow past unswept airfoils in detail. *10*

9. Write short notes on any ***two*** of the following : *5+5=10*

   (a) Consequence of Linearity

   (b) Lift Effect

   (c) Transonic Flow

10. Explain briefly any ***two*** of the following : *5+5=10*

   (a) Mach Cone

   (b) Mach Waves

   (c) Mach Angle